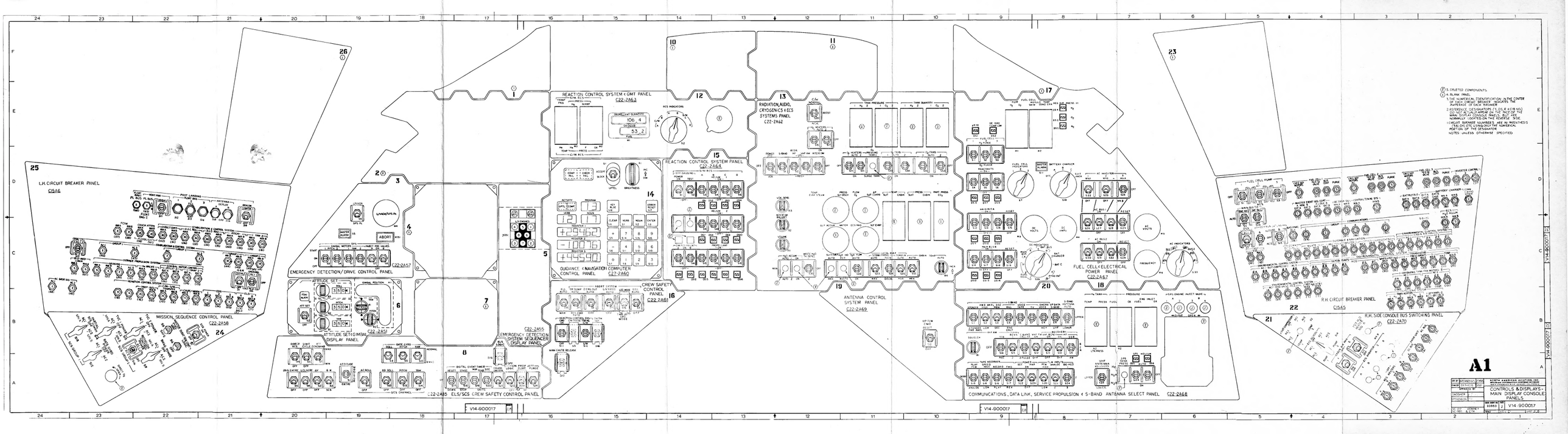
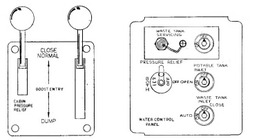
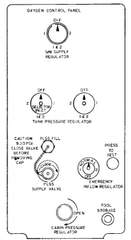
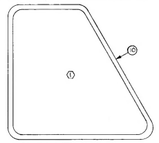

1
EMERGENCY DETECTION/DRIVE CONTROL PANEL C22-2457
2
3
4
5
ATTITUDE SET/GIMBAL DISPLAY PANEL C22-2459
6
7
EMERGENCY DETECTION SYSTEM SEQUENCER DISPLAY PANEL C22-2455
8
ELS/SCS CREW SAFETY CONTROL PANEL C22-2485
10
REACTION CONTROL SYSTEM + GMT PANEL C22-2463
11
12
13
RADIATION, AUDIO, CRYOGENICS + ECS SYSTEMS PANEL C22-2462
14
15
REACTION CONTROL SYSTEM PANEL C22-2464
GUIDANCE + NAVIGATION COMPUTER CONTROL PANEL C27-2460
16
CREW SAFETY CONTROL PANEL C22-2491
17
18
19
ANTENNA CONTROL SYSTEM PANEL C22-2469
20
FUEL CELL + ELECTRICAL POWER PANEL C22-2467
21
22
R.H. CIRCUIT BREAKER PANEL C15A5
R.H. SIDE CONSOLE BUS SWITCHING PANEL C22-2470
23
24
25
L.H. CIRCUIT BREAKER PANEL C15A6
MISSION SEQUENCE CONTROL PANEL C22-2458
26
COMMUNICATIONS, DATA LINK, SERVICE PROPULSION + S-BAND ANTENNA SELECT PANEL C22-2468
V14-900017
CA
V14-900017
CA
(F) 5 DELETED COMPONENTS
(4) 4 BLANK PANEL
THE ALPHA-NUMERIC IDENTIFICATION IN THE CENTER OF EACH CIRCUIT BREAKER INDICATES THE AMPERAGE OF EACH BREAKER
2 REFERENCE DESIGNATORS (-5, DS, K (OR NO.) OR XK) ARE NOT SHOWN ON THIS PART OF THE DRAWING BUT ARE SHOWN ON THE PARTS NORMALLY LOCATED ON THE REVERSE SIDE
1 CIRCUIT BREAKER NUMBERS ARE IN WHICHEVER (TENS OR ETC.) LINE OUT OF THE NUMERICAL PORTION OF THE DESIGNATOR
NOTES UNLESS OTHERWISE SPECIFIED
A1
NORTH AMERICAN AVIATION, INC.
SPACE AND INFORMATION SYSTEMS DIVISION
CONTROLS & DISPLAYS - MAIN DISPLAY CONSOLE PANELS
V14-900017
SCALE 1/4
SHEET 1 OF 1

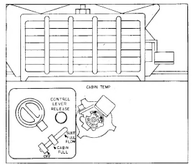
LH EQUIPMENT BAY



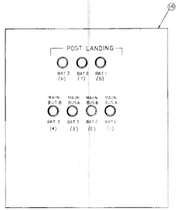


LH FWD EQUIPMENT BAY



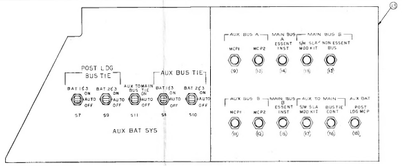


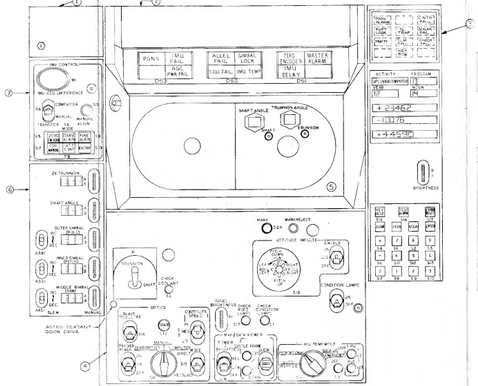
CENTER CREW COMPARTMENT PLATFORM

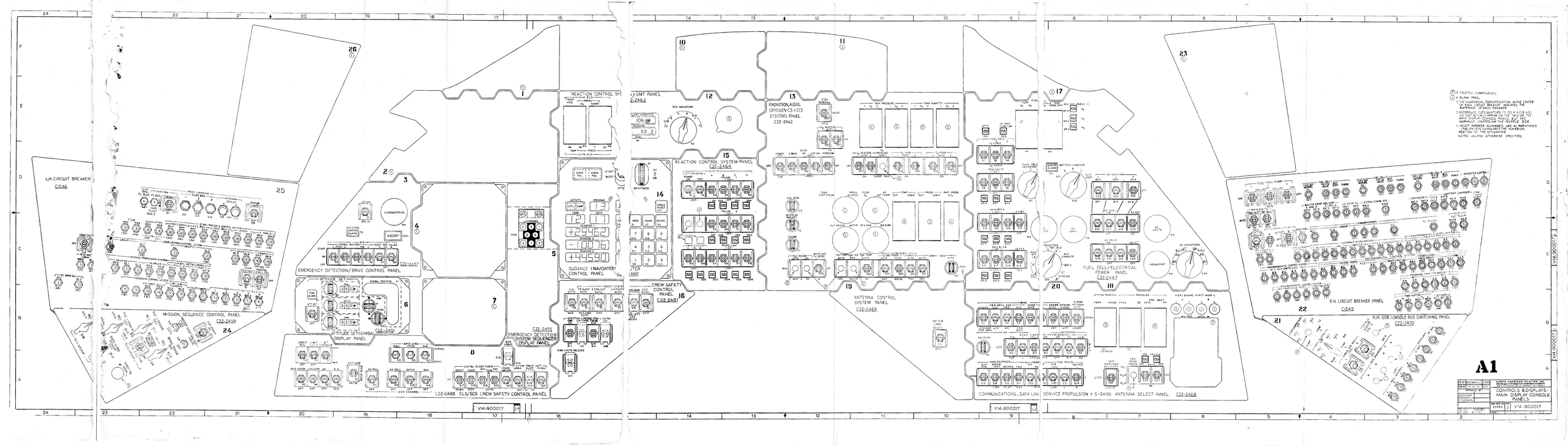


V14-900017

LOWER EQUIPMENT BAY




PGNS
VHF FAIL
ACCEL FAIL
GIMBAL LOCK
TEMP
TEST ENCODER
MASTER ALARM
PGNS
AUX FAIL
COUPLING DATA UNIT
DSKY
IMU CONTROL
MODE SELECT
DIFFERENCE
COMPUTER
MANUAL TRANSFER
ZERO ENCODERS
ENTER
PROCEED
RESET
KEY REL
VERB
NOUN
+
CLEAR
ATTITUDE ERROR METERS
ROLL
PITCH
YAW
SCALE
ATTITUDE
TRANS
DAP
ATTITUDE MANEUVER
RATE
DEADBAND
ATTITUDE SET
MODE CONTROL
SCS
AUTO
CSM
LM
ATT SET
ENTRY
TVC
SPS
GDC ALIGN
ENG ARM
RCS
DIRECT
ULLAGE
ABORT
STAGE
ATT/TRANS CONTROL
ROLL
PITCH
YAW
ACCEL CMD
RATE CMD
ATTITUDE
TRANSLATION
+X
-X
+Y
-Y
+Z
-Z
SPACECRAFT CONTROL
PULSE
NORM
HIGH
DIRECT
ULLAGE
SEP
PB RESET
ABORT
ABORT STAGE
SCS ATT CONTR
SCS ATT/TRANS CONTR
CM/SM SEP
SM/SC SEP
S/C CONTROL
CMC
SCS
ELS LOGIC
BMAG MODE
ATTITUDE
ATTITUDE/TRANSLATION CONTROL
ROLL
PITCH
YAW
ATTITUDE SET
CAUTION RESET
ELS AUTO
CM RCS LOGIC
SM RCS LOGIC
SM RCS HTR
SCS LOGIC
SCS ATT SET
SCS TVC
SCS ELS LOGIC
SCS ENTRY
SCS ATT/TRANS


L.H. CIRCUIT BREAKER
C15A6
MISSION SEQUENCE CONTROL PANEL
C22-2A58
EMERGENCY DETECTION/DRIVE CONTROL PANEL
C22-2A57
ATTITUDE SET/GIMBAL DISPLAY PANEL
C22-2A51
EMERGENCY DETECTION/SYSTEM SEQUENCER DISPLAY PANEL
C22-2A55
ELS/SCS CREW SAFETY CONTROL PANEL
C22-2A85
REACTION CONTROL SYS
GUIDANCE &NAVIGATION CONTROL PANEL
REACTION CONTROL SYSTEM PANEL
C22-2A64
CREW SAFETY CONTROL PANEL
C22-2A61
RADIATION,AUDIO, CRYOGENICS & ECS SYSTEMS PANEL
C22-2A62
ANTENNA CONTROL SYSTEM PANEL
C22-2A69
COMMUNICATIONS, DATA LINK
SERVICE PROPULSION & S-BAND ANTENNA SELECT PANEL C22-2A68
FUEL CELL & ELECTRICAL POWER PANEL
C22-2A67
R.H. CIRCUIT BREAKER PANEL
C15A5
R.H. SIDE CONSOLE BUS SWITCHING PANEL
C22-2A70
DELETED COMPONENTS
BLANK PANEL
THE NUMERICAL IDENTIFICATION IN THE CENTER OF EACH CIRCUIT BREAKER INDICATES THE AMPERAGE OF EACH BREAKER
REFERENCE DESIGNATORS (1,25,4 FOR HOUSE) ARE ON THE BACK OF THE PANEL EXCEPT THE MAIN DISPLAY CONSOLE UNITS, BUT ARE NORMALLY LOCATED ON THE REVERSE SIDE.
CIRCUIT BREAKER NUMBERS ARE IN PARENTHESIS THRU OUT EXCEPTING ONLY THE NUMERICAL PORTION OF THE DESIGNATOR
NOTES UNLESS OTHERWISE SPECIFIED
A1
NORTH AMERICAN AVIATION, INC.
CONTROLS & DISPLAYS - MAIN DISPLAY CONSOLE PANELS
SIZE A
SCALE NONE
SHEET 1 OF 1
V14-900017
V14-900017F
V14-900017A
V14-900017

LH EQUIPMENT BAY

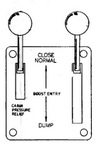
LH FWD EQUIPMENT BAY

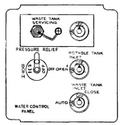
CENTER CREW COMPARTMENT PLATFORM

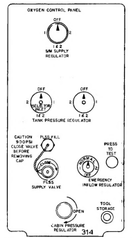
LOWER EQUIPMENT BAY

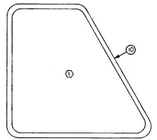
RH EQUIPMENT BAY

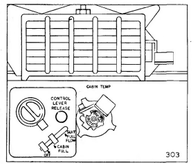
RH FWD EQUIPMENT BAY

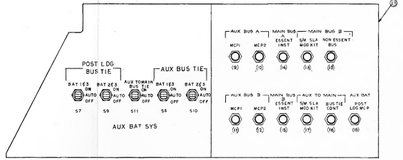


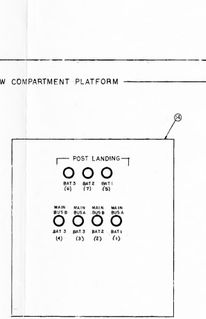


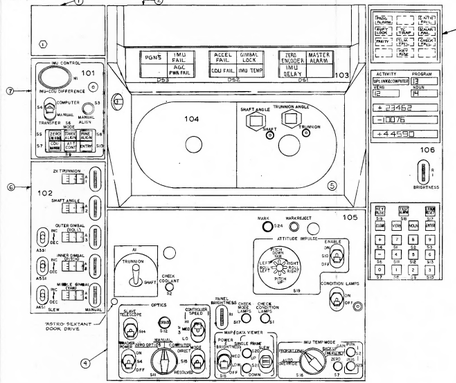


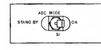




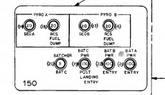


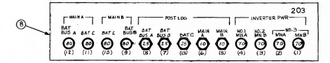


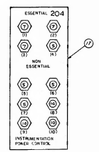




KEY IN NO.	PANEL REFERENCE DESIGNATOR	PANEL NOMENCLATURE
1	C22-1634	**CONTROL LOWER EQUIPMENT BAY PANEL 2B**
2	C27-1623	CONDITION LIMITATION PANEL 2B
3	C27-1632	ASC COMPUTER DISPLAY AND KEYBOARD PANEL 10E
4	C27-1631	G&N OPTICS CONTROL PANEL 10D
5	C27-1630	G&N OPTICS PANEL 13A
6	C27-1628	LEC CONTROL PANEL 10C
7	C27-1627	IMU CONTROL PANEL 10C
8	C1427	ELECTRICAL POWER CIRCUIT BREAKER PANEL
9	C1446	BATTERY CIRCUIT BREAKER PANEL
10	C22-1638	CLOCK AND TIMER PANEL 9B
11	C26-1444	AUXILIARY DISPLAY PANEL 9F
12		ASC PANEL 10J
13	C1431-1	AUXILIARY POWER CONTROL BOX ASSY
14	C1467-1	AUXILIARY POWER SYSTEM CIRCUIT BREAKER BOX ASSY
15	C1411-1	UP-RIGHTING CONTROL ASSY
16	C-23	RCS STEAM CUT-OFF BREAKERS
17	C2841-5	DC POWER CONTROL MOD







3. BLANK PANELS

2. THE NUMERICAL IDENTIFICATION OF THE CENTER OF EACH CIRCUIT BREAKER INDICATES THE AMPERAGE OF EACH BREAKER

1. CIRCUIT BREAKER NUMBERS ARE IN PARENTHESIS (CB1-(24) ETC USING ONLY THE NUMERICAL PORTION OF THE DESIGNATORS

NOTES: UNLESS OTHERWISE SPECIFIED

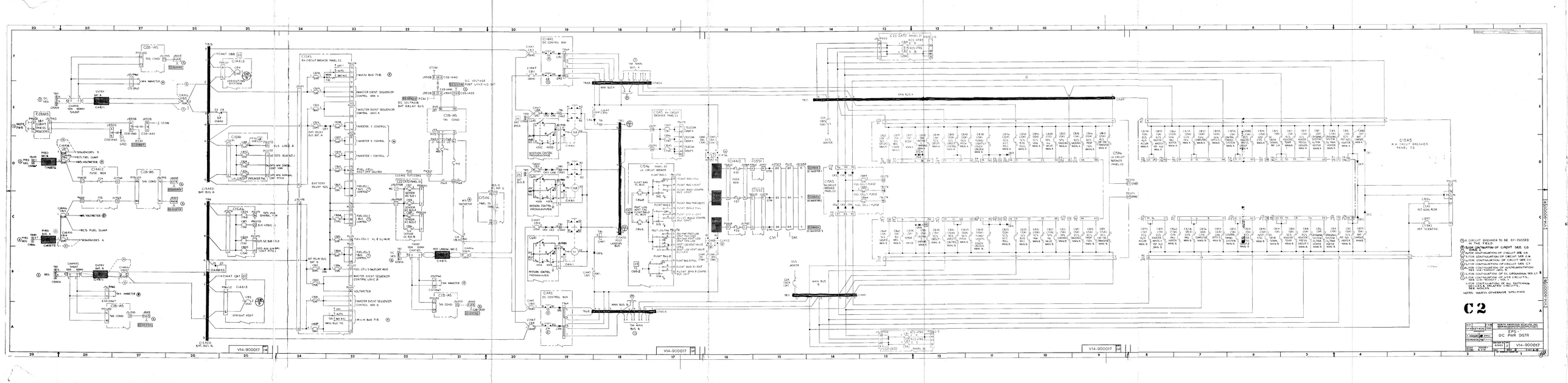
A2

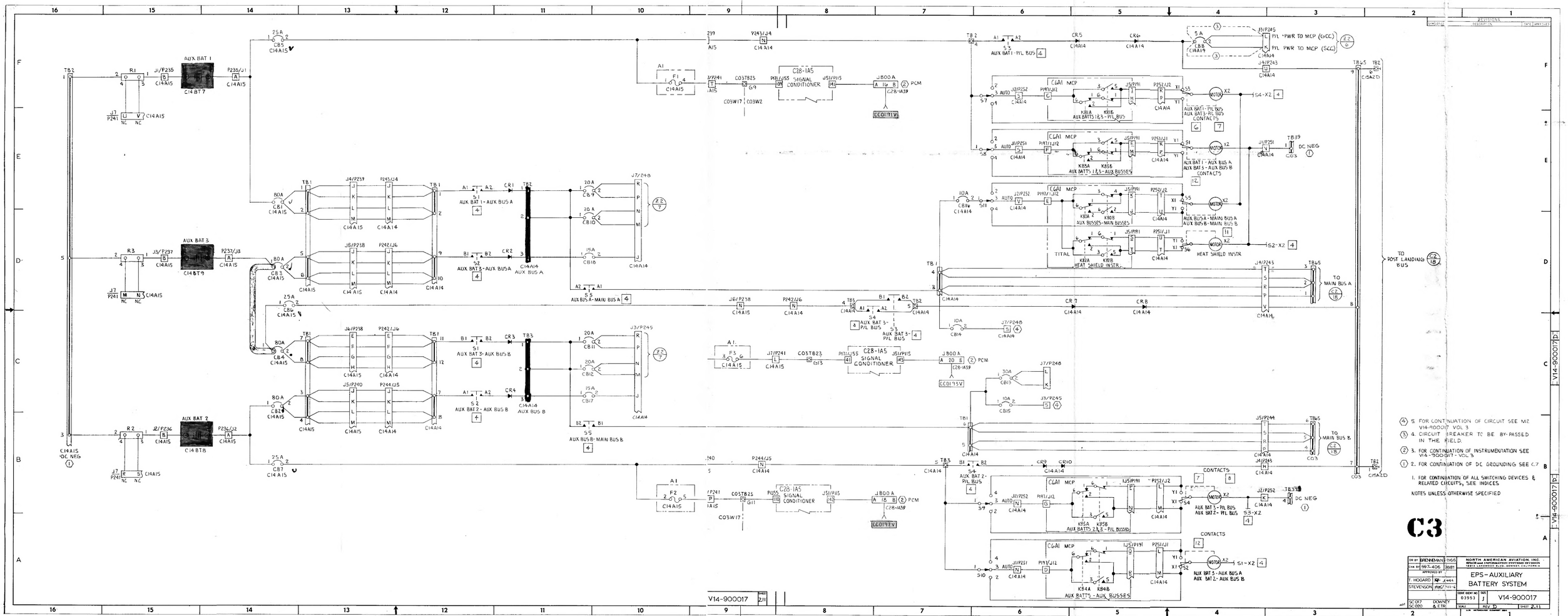
DR BY	DATE	NORTH AMERICAN AVIATION, INC.	
CH BY	DATE	SPACE AND INFORMATION SYSTEMS DIVISION	
APPROVED BY			
DESIGNER		CONTROL & DISPLAYS LOWER EQUIPMENT BAY PANELS	
SIZE	CODE IDENT NO	DRAWING NO	REV
D	80583	V14-900017	
SCALE		SHEET	

V14-900017

V14-900017

V14-900017


C2
C1A5 MAIN BUS TIE
C1A6 MAIN BUS TIE
C1A7 MAIN BUS TIE
C1A8 MAIN BUS TIE
C1A5 RH CIRCUIT BREAKER PANEL P5
C2A5 LH CIRCUIT BREAKER PANELS
C2A6 RH CIRCUIT BREAKER PANELS
C1A5 FLT SUPL RCPT
C2A7 VOT SCIENTIFIC
C1A5 EPS DC PWR DISTR
V14-900017



(4) 5. FOR CONTINUATION OF CIRCUIT SEE M2 V14-900017 VOL 3.

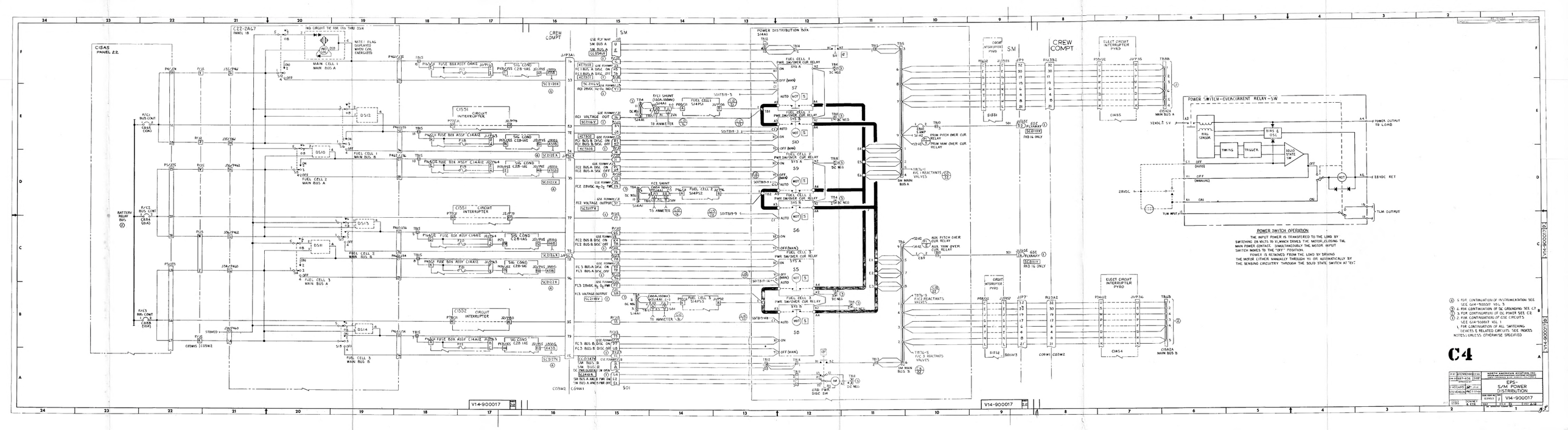
(3) 4. CIRCUIT BREAKER TO BE BY-PASSED IN THE FIELD.

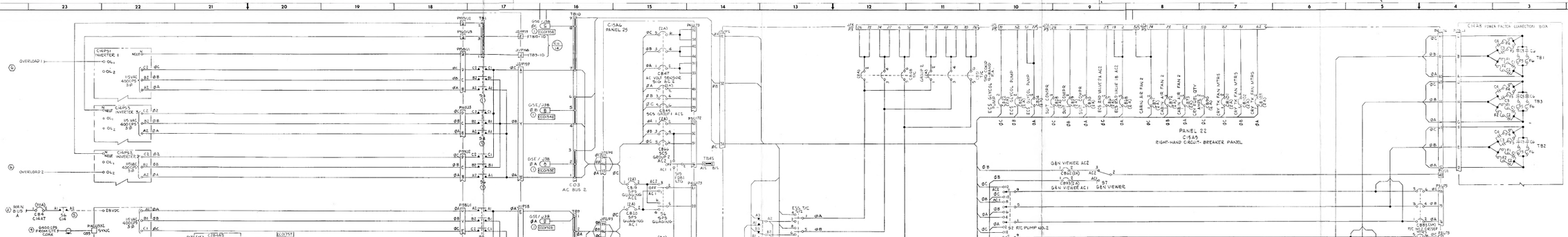
(2) 3. FOR CONTINUATION OF INSTRUMENTATION SEE V14-900017 - VOL 3.

(1) 2. FOR CONTINUATION OF DC GROUNDING SEE C7

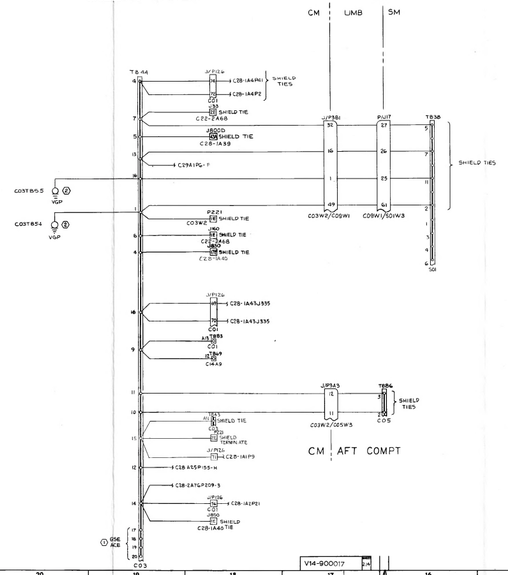
1. FOR CONTINUATION OF ALL SWITCHING DEVICES & RELATED CIRCUITS, SEE INDICES.

NOTES UNLESS OTHERWISE SPECIFIED

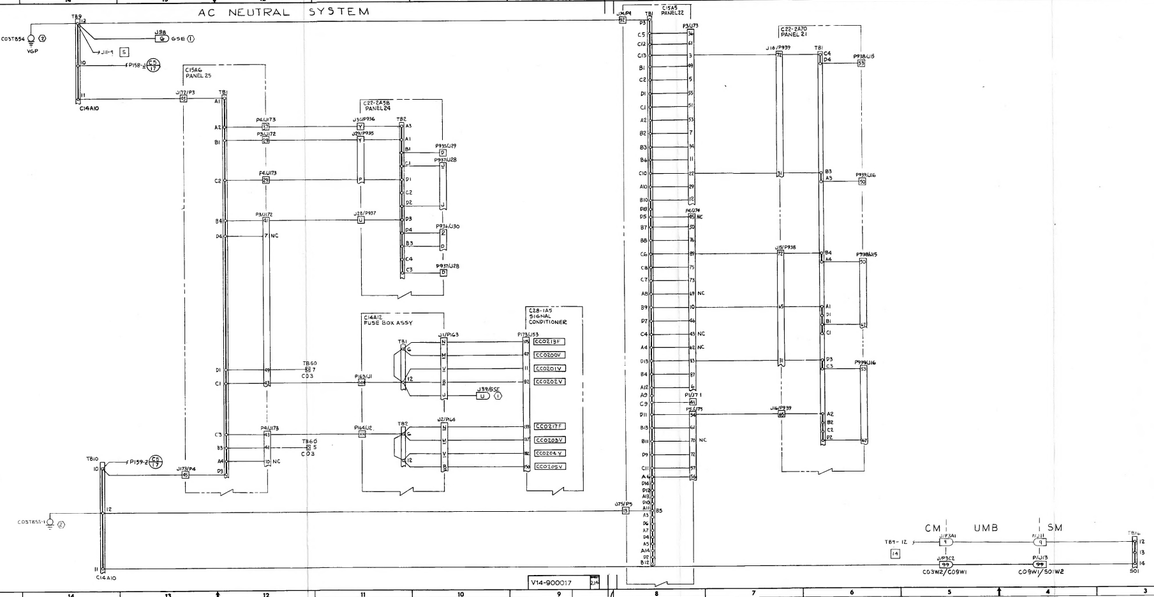

C15A5
PANEL Z2
C22-2A7
PANEL 1B
MAIN CELL 1 MAIN BUS A
MAIN CELL 2 MAIN BUS B
FUEL CELL 1 MAIN BUS A
FUEL CELL 2 MAIN BUS A
FUEL CELL 3 MAIN BUS A
FUEL CELL 2 MAIN BUS B
FUEL CELL 3 MAIN BUS B
BATTERY RELAY BUS
STOWED
CROWN
CREW COMPT
SM
POWER DISTRIBUTION BOX S14A1
FUEL CELL 1 PWR SW/OVER CUR RELAY SYS A
FUEL CELL 2 PWR SW/OVER CUR RELAY SYS A
FUEL CELL 2 PWR SW/OVER CUR RELAY SYS B
FUEL CELL 3 PWR SW/OVER CUR RELAY SYS A
FUEL CELL 3 PWR SW/OVER CUR RELAY SYS B
AUX PITCH OVER CUR RELAY
AUX YAW OVER CUR RELAY
PITCH OVER CUR RELAY
YAW OVER CUR RELAY
TB7A-1 R/C REACTANTS VALVES
TB7A-5 F/C 3 REACTANTS VALVES
TB7A-6 F/C 3 REACTANTS VALVES
SM MAIN BUS A
SM MAIN BUS B
GRD FWD DISC SW
CIRCUIT INTERRUPTER P7/P1
CIRCUIT INTERRUPTER P7/P2
CIRCUIT INTERRUPTER P7/P3
ELECT CIRCUIT INTERRUPTER P7/P60
ELECT CIRCUIT INTERRUPTER P7/P61
ELECT CIRCUIT INTERRUPTER P7/P62
ELECT CIRCUIT INTERRUPTER P7/P63
ELECT CIRCUIT INTERRUPTER P7/P64
ELECT CIRCUIT INTERRUPTER P7/P65
ELECT CIRCUIT INTERRUPTER P7/P66
SIG COND C28-1AS
SIG COND C28-1AC
SIG COND C28-1AG
SIG COND C28-1AE
SIG COND C28-1AF
SIG COND C28-1AD
FUSE BOX ASSY C14A12
FUSE BOX ASSY C14A13
FUSE BOX ASSY C14A14
FUSE BOX ASSY C14A15
FUSE BOX ASSY C14A16
FUSE BOX ASSY C14A17
POWER SWITCH-OVERCURRENT RELAY-SW
SOLID STATE SW
BIAS & OSC
TIMING
TRIGGER
CURRENT SENSOR
POWER OUTPUT TO LOAD
TLM OUTPUT
28VDC RET
28VDC S.V
TLM INPUT
POWER SWITCH OPERATION
THE INPUT POWER IS TRANSFERRED TO THE LOAD BY SWITCHING 28 VOLTS TO 10 WHICH DRIVES THE MOTOR, CLOSING THE MAIN POWER CONTACT. SIMULTANEOUSLY THE MOTOR INPUT SWITCH MOVES TO THE "OFF" POSITION.
POWER IS REACHED FROM THE LOAD BY DRIVING THE MOTOR EITHER MANUALLY THROUGH Y1 OR AUTOMATICALLY BY THE SENSING CIRCUITRY THROUGH THE SOLID STATE SWITCH AT C1.
NOTE: FLAG DISPLAYED WHEN COIL ENERGIZED
IND CIRCUIT TIE FOR CDU THRU DS14
C4
EPS-
S/M POWER DISTRIBUTION
NORTH AMERICAN AVIATION, INC.
SPACE AND INFORMATION SYSTEMS DIVISION
V14-900017
SIZE B
SCALE NONE
SHEET 1 OF 1
V14-900017 B2
V14-900017 B1
V14-900017 A


C14PS1 INVERTER 1
C14PS2 INVERTER 2
C14PS3 INVERTER 3
C14PS4 INVERTER 4
C14PS5 INVERTER 5
C14PS6 INVERTER 6
C14PS7 INVERTER 7
C14PS8 INVERTER 8
C14PS9 INVERTER 9
C14PS10 INVERTER 10
C14PS11 INVERTER 11
C14PS12 INVERTER 12
C14PS13 INVERTER 13
C14PS14 INVERTER

SHIELDING SYSTEM



AC NEUTRAL SYSTEM



NOTES: UNLESS OTHERWISE SPECIFIED

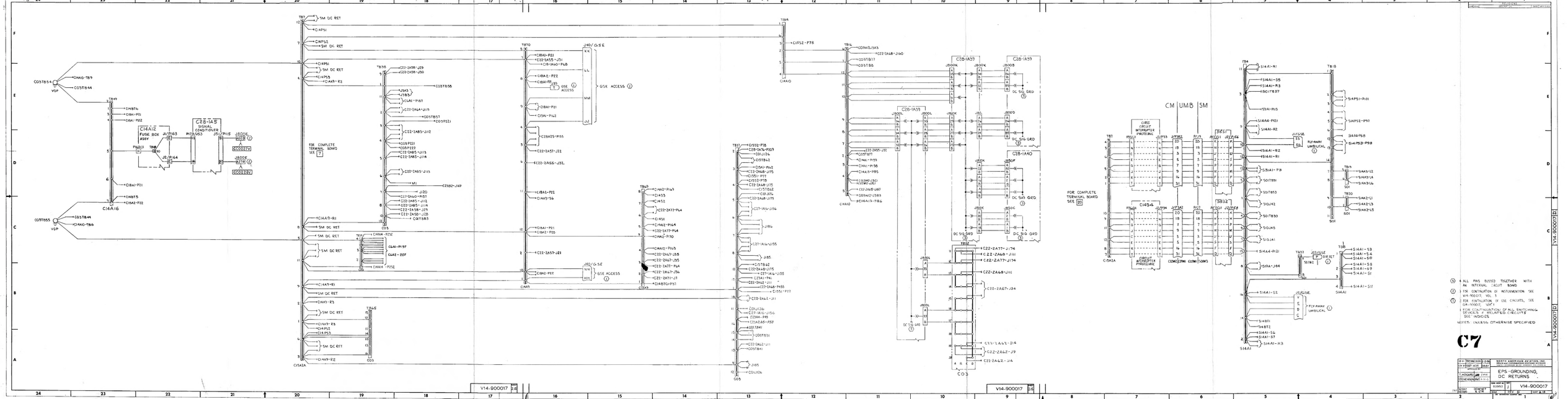
② S FOR CONTINUATION OF CIRCUIT, SEE C7

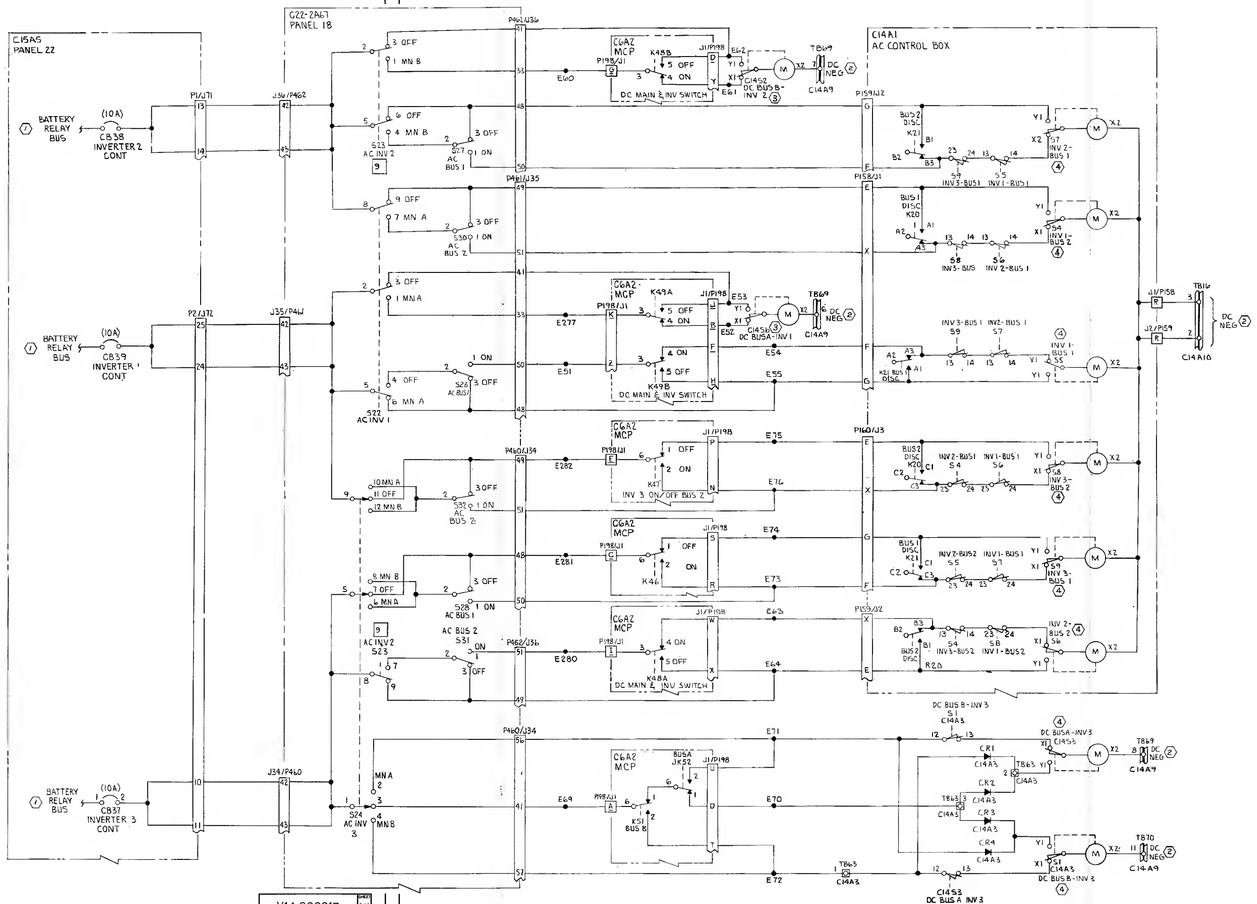
① F FOR CONTINUATION OF WIRE CIRCUITS, SEE V14-900017 VOL II

F, FOR CONTINUATION - ALL SWITCHING DEVICES AND RELATED CIRCUITS, SEE INDICES

C6

DRAWN	8-15-72	NORTH AMERICAN ROCKWELL SPACE DIVISION	
CHECKED	8-15-72		
ENGINEER	8-15-72	EPS GROUNDING SHIELD RETURNS & AC NEUTRAL	
SCALE	NONE	SIZE	D
63951	7	V14-900017	
REV		SHEET 6 OF	


C14A12
FUSE BOX ASSY
C28-1A5
SIGNAL CONDITIONER
C14A16
C15A2A
C14A9
C14A10
C14A11
C14A13
C14A14
C14A15
C14A17
C14A18
C14A19
C14A20
C14A21
C14A22
C14A23
C14A24
C14A25
C14A26
C14A27
C14A28
C14A29
C14A30
C14A31
C14A32
C14A33
C14A34
C14A35
C14A36
C14A37
C14A38
C14A39
C14A40
C14A41
C14A42
C14A43
C14A44
C14A45
C14A46
C14A47
C14A48
C14A49
C14A50
C14A51
C14A52
C14A53
C14A54
C14A55
C14A56


C15A5
PANEL 22
G22-2A67
PANEL 18
C14A1
AC CONTROL BOX
BATTERY RELAY BUS
(10A)
CB38
INVERTER 2 CONT
CB39
INVERTER 1 CONT
CB57
INVERTER 3 CONT
S23 AC INV 2
S22 AC INV 1
S24 AC INV 3
S27 AC BUS 1
S30 AC BUS 2
S26 AC BUS 1
S28 AC BUS 1
S31 AC BUS 2
S25 AC INV 2
C6A2 MCP
K49B
K49A
K47
K46
K48A
K48B
K51
DC MAIN & INV SWITCH
INV 3 ON/OFF BUS 2
DC BUS B-INV 2
DC BUS A-INV 2
DC BUS B-INV 3
DC BUS A-INV 3
BUS 2 DISC K21
BUS 1 DISC K20
INV 3-BUS 1
INV 1-BUS 1
INV 2-BUS 1
INV 3-BUS 2
INV 2-BUS 2
INV 1-BUS 2
TB69
TB70
TB63
TB64
DC NEG
C14A9
C14A10
C14A3
C14A5
C14A6
C14A8
P1/J71
P2/J72
P3/J73
J35/P462
J36/P463
J34/P440
P460/J36
P461/J35
P462/J34
P1/J1
P2/J2
P3/J3
P158/J2
P159/J2
P160/J3
J1/P58
J2/P59
J1/P198
P198/J1
E60
E61
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E76
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E71
E72
E51
E52
E63
E62
E66
E67
E68
MN A
MN B
OFF
ON
1 MN B
2 MN A
3 OFF
4 ON
5 OFF
6 MN A
7 MN A
8 OFF
9 OFF
10 MN A
11 OFF
12 MN B
1 ON
2 OFF
3 OFF
4 ON
5 OFF
6 MN A
7 MN B
8 OFF
9
10
11
12
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S59
R20
R21
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R43
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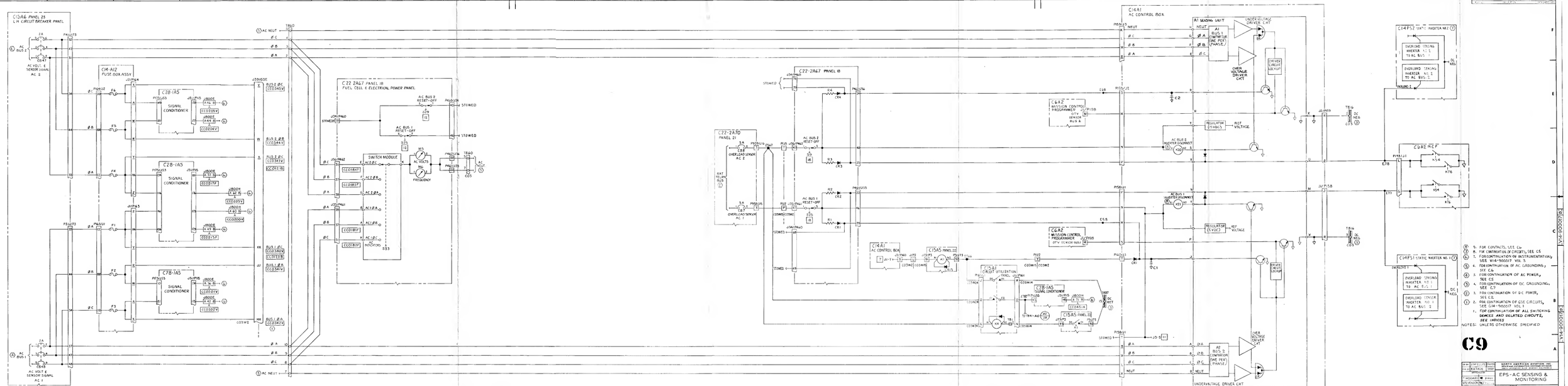
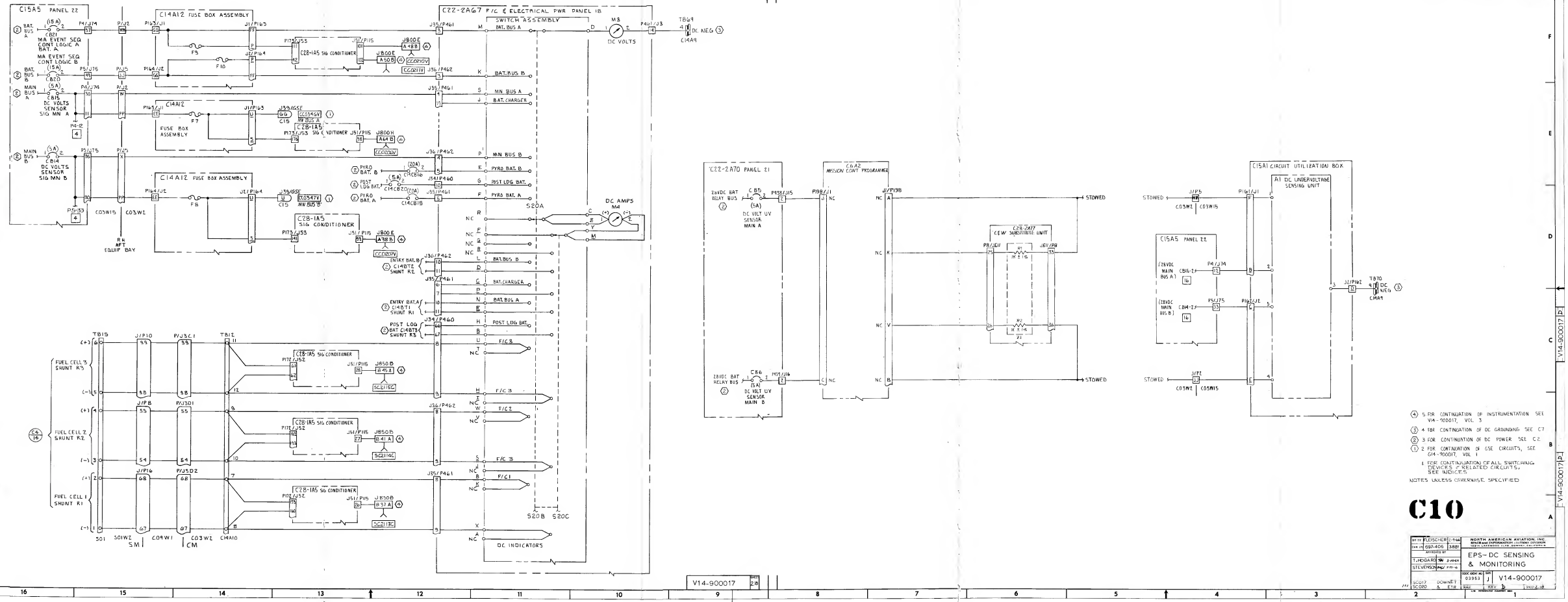
R53
R54
R55
R56
R57
R58
R59


C15A6 PANEL 23
L/H CIRCUIT BREAKER PANEL
AC BUS 2
AC VOLT & SENSOR SIGNAL AC 2
C14A12
FUSE BOX ASSY
C28-1A5
SIGNAL CONDITIONER
C28-1A5
SIGNAL CONDITIONER
C28-1A5
SIGNAL CONDITIONER
AC BUS 1
AC VOLT & SENSOR SIGNAL AC 1
AC NEUT
C22-2A67 PANEL 18
FUEL CELL & ELECTRICAL POWER PANEL
AC BUS 2 RESET-OFF
AC BUS 1 RESET-OFF
SWITCH MODULE
AC VOLTS
FREQUENCY
INDICATORS
S33
C22-2A70
PANEL 21
OVERLOAD SENSOR AC 2
OVERLOAD SENSOR AC 1
C14A1
AC CONTROL BOX
C15A5 PANEL 22
C15A5
CIRCUIT UTILIZATION PANEL
C28-1A5
SIGNAL CONDITIONER
C15A5 PANEL 22
C14A1
AC CONTROL BOX
A1 SENSING UNIT
A1 BUS 1 MONITOR (ONE PER) PHASE
UNDER VOLTAGE DRIVER CKT
OVER VOLTAGE DRIVER CKT
C6A2
MISSION CONTROL PROGRAMMER
C6A2
MISSION CONTROL PROGRAMMER
A2 BUS 2 MONITOR (ONE PER) PHASE
OVER VOLTAGE DRIVER CKT
UNDERVOLTAGE DRIVER CKT
C14A1
AC CONTROL BOX
C14P52 STATIC INVERTER NO 2
OVERLOAD SENSING INVERTER NO 2 TO AC BUS 2
OVERLOAD SENSING INVERTER NO 2 TO AC BUS 2
C6A2 MCF
C14P51 STATIC INVERTER NO 1
OVERLOAD SENSING INVERTER NO 1 TO AC BUS 1
OVERLOAD SENSOR INVERTER NO 1 TO AC BUS 2
NOTES: UNLESS OTHERWISE SPECIFIED
1. FOR CONTACTS, SEE Cw
2. FOR CONFIGURATION OF CIRCUITS, SEE C5
3. FOR CONFIGURATION OF INSTRUMENTATION, SEE V14-900017 VOL 5
4. FOR CONTINUATION OF AC GROUNDING, SEE C4
5. FOR CONTINUATION OF AC POWER, SEE C3
6. FOR CONTINUATION OF DC GROUNDING, SEE C7
7. FOR CONTINUATION OF DC POWER, SEE C6
8. FOR CONTINUATION OF GSE CIRCUITS, SEE GSE-900017 VOL 1
9. FOR CONTINUATION OF ALL SWITCHING DEVICES AND RELATED CIRCUITS, SEE INDICES
C9
NORTH AMERICAN AVIATION, INC.
EPS-AC SENSING & MONITORING
V14-900017
V14-900017
V14-900017



(4) 5 FOR CONTINUATION OF INSTRUMENTATION SEE V14-900017, VOL 3

(3) 4 FOR CONTINUATION OF DC GROUNDING SEE C7

(2) 3 FOR CONTINUATION OF DC POWER SEE C2

(1) 2 FOR CONTINUATION OF GSE CIRCUITS, SEE G14-900017, VOL 1

E FOR CONTINUATION OF ALL SWITCHING DEVICES & RELATED CIRCUITS, SEE INDICES

NOTES UNLESS OTHERWISE SPECIFIED

C10

DR BY	FLEISCHER	C-1146
CHK BY	697-406	3801
APPROVED BY		
T.HOGARD	SW J-1044	
STEVENSON		777-6
SCO17	DOWNEY & ETR	

NORTH AMERICAN AVIATION, INC.
SPACE and INFORMATION SYSTEMS DIVISION
12214 LAKEWOOD BLVD., DOWNEY, CALIFORNIA

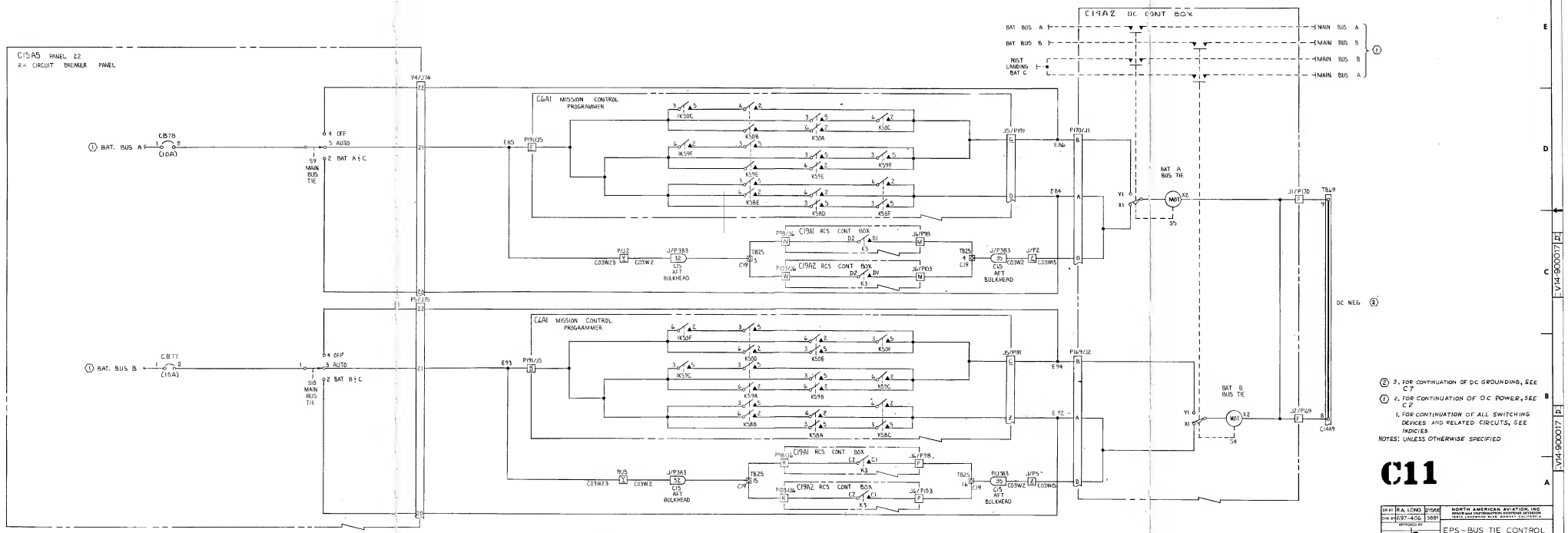
EPS-DC SENSING & MONITORING

DOC. IDENT NO. 03953 | SIZE J | V14-900017 | REV D

V14-900017 | SHT 2 | 10

V14-900017 D

V14-900017 D



C11

DR BY	R.A. LONG	2/15/66
CHK BY	697-406	3881
APPROVED BY		
T. HOGARD		2-15-66
STEVENSON		2-15-66

NORTH AMERICAN AVIATION, INC.
SPACE AND INFORMATION SYSTEMS DIVISION

EPS—BUS TIE CONTROL

DOC EXEC NO. 03953 | SIZE J | V14-900017

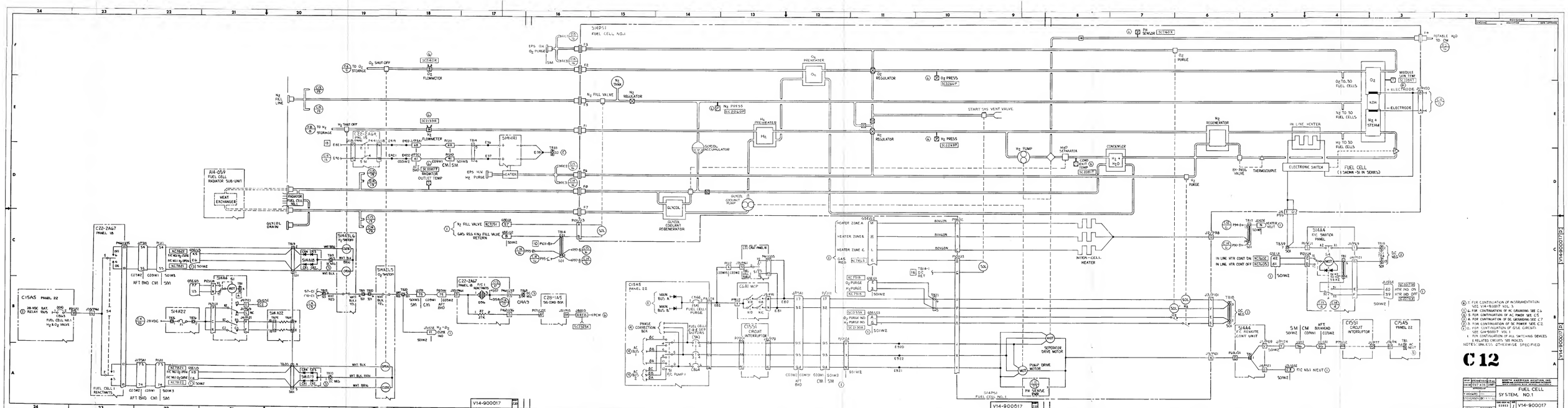
SCALE | REV. D | SHEET 2-15

SC 017 DOWNEY
SC 089 & ETR

V14-900017 2-15

V14-900017 P1

V14-900017 P2


S14P51
FUEL CELL NO.1
C15A5 PANEL 22
C22-2A67 PANEL 18
S14A22
S14A44
S14A44 P/C SWITCH PANEL
S14A44 P/C REMOTE CONT UNIT
S14A21,S
O2 SWITCH
S14A15,S
H2 SWITCH
A14-059
FUEL CELL RADIATOR SUB-UNIT
HEAT EXCHANGER
RADIATOR FUEL CELL NO.1
GLYCOL DRAIN
O2 SHUT OFF
O2 FLOWMETER
O2 HEATER
O2 REGULATOR
O2 PURGE
O2 TO 50 FUEL CELLS
MODULE FAN TEMP
+ ELECTRODE
- ELECTRODE
KOH
H2 + STEAM
H2 TO 50 FUEL CELLS
N2 FILL LINE
N2 FILL VALVE
N2 REGULATOR
N2 PURGE
N2 REGENERATOR
H2 SHUT OFF
H2 FLOWMETER
H2 HEATER
H2 REGULATOR
H2 PURGE
H2 PUMP
WATER SEPARATOR
CONDENSER
COND EXIT TEMP
IN LINE HEATER
ELECTRONIC SWITCH
FUEL CELL (3 SHOWN-54 IN SERIES)
RADIATOR OUTLET TEMP
EPS H2 PURGE
EPS O2 PURGE
GLYCOL ACCUMULATOR
GLYCOL COOLANT PUMP
GLYCOL COOLANT REGENERATOR
STARTING VENT VALVE
BY-PASS VALVE
THERMOCOUPLE
INTER-CELL HEATER
PRESSURE SWITCH
PUMP DRIVE MOTOR
SEPERATOR DRIVE MOTOR
PH SENSOR
TO O2 STORAGE
TO H2 STORAGE
PORTABLE H2O TO CM
H2 FUEL CELL REACTANTS
FUEL CELL REACTANTS
28 VDC BAT. BUS
RELAY BUS
28VDC
AFT BHD
CM
SM
SC14X
SC15X
SC16X
SC17X
SC18X
SC19X
SC20X
SC21X
SC22X
SC23X
SC24X
SC25X
SC26X
SC27X
SC28X
SC29X
SC30X
SC31X
SC32X
SC33X
SC34X
SC35X
SC36X
SC37X
SC38X
SC39X
SC40X
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SC42X
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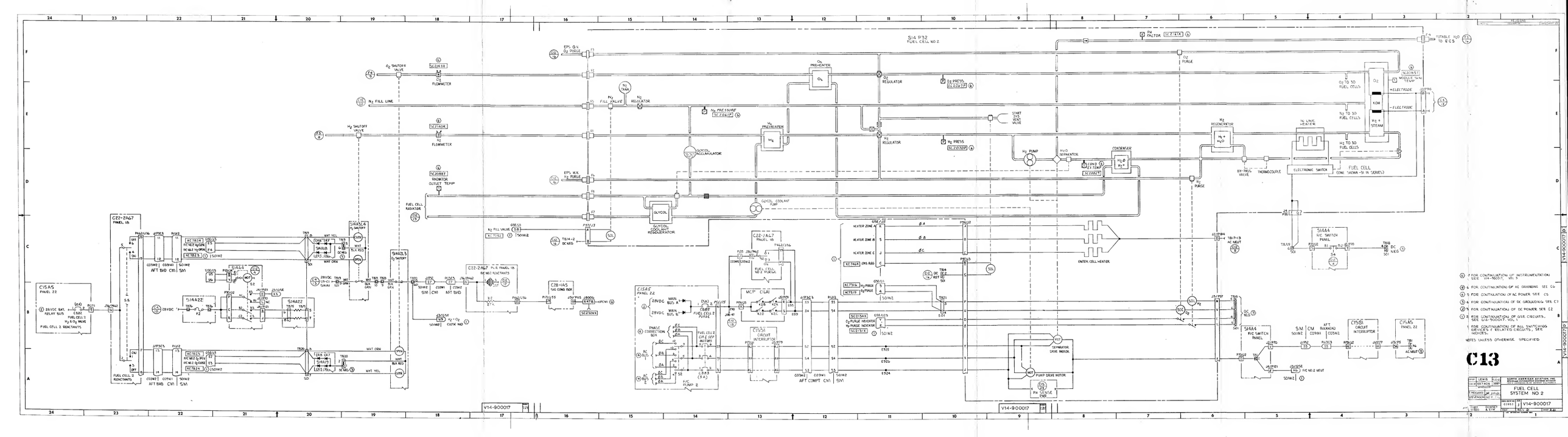
SC47X
SC48X
SC49X
SC50X
SC51X
SC52X
SC53X



(A) P FOR CONTINUATION OF INSTRUMENTATION SEE V14-900017 VOL 1

(B) 6 FOR CONTINUATION OF AC GROUNDING SEE C6

(C) 5 FOR CONTINUATION OF AC POWER SEE C5

(D) 6 FOR CONTINUATION OF DC GROUNDING SEE C7

(E) 5 FOR CONTINUATION OF DC POWER SEE C2

(F) 2 FOR CONTINUATIONS OF GSE CIRCUITS, SEE SID 900017 VOL 1

1 FOR CONTINUATION OF ALL SWITCHING DEVICES / RELATED CIRCUITS, SEE INDICES.

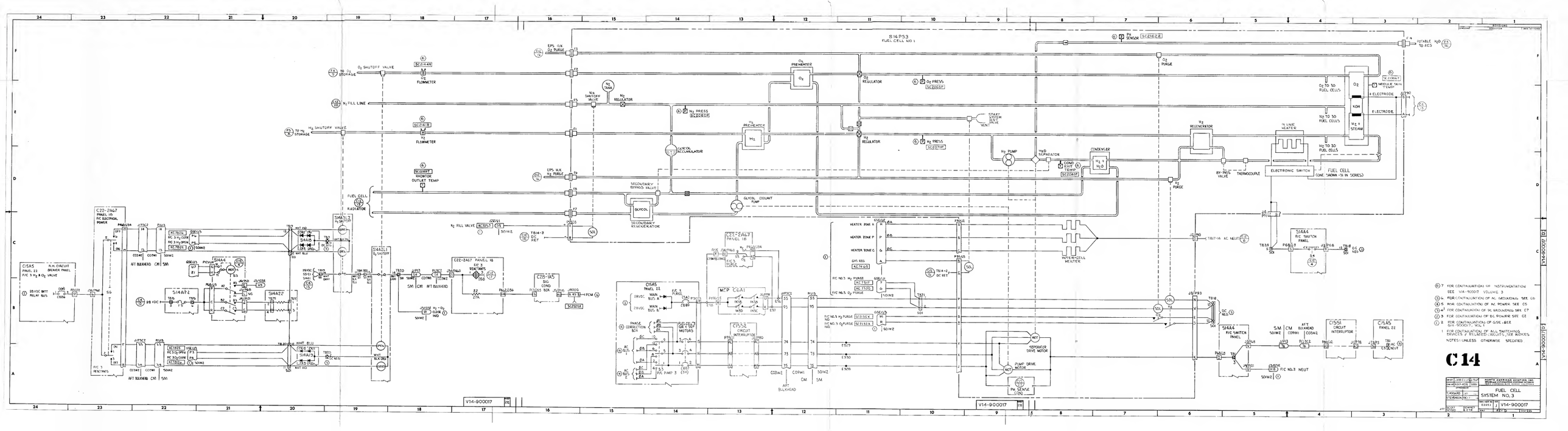
NOTES UNLESS OTHERWISE SPECIFIED

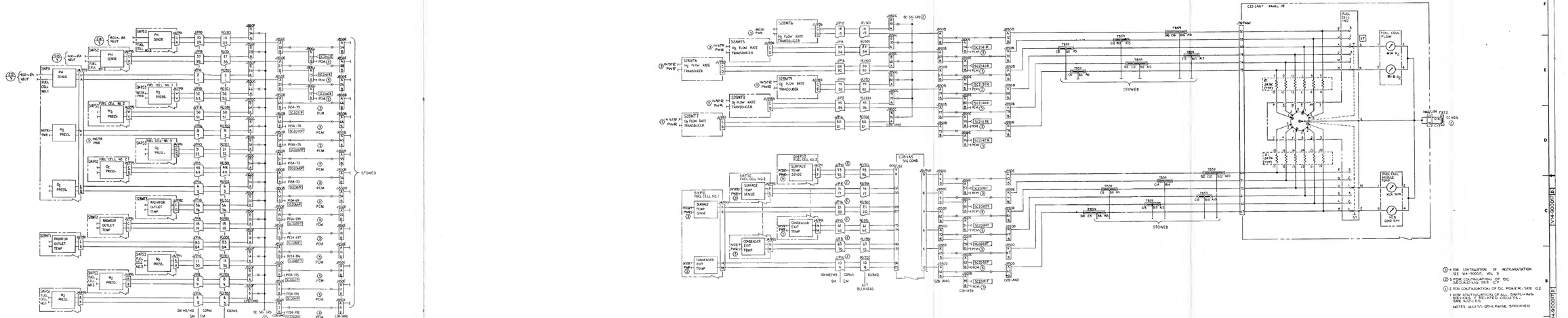
C13

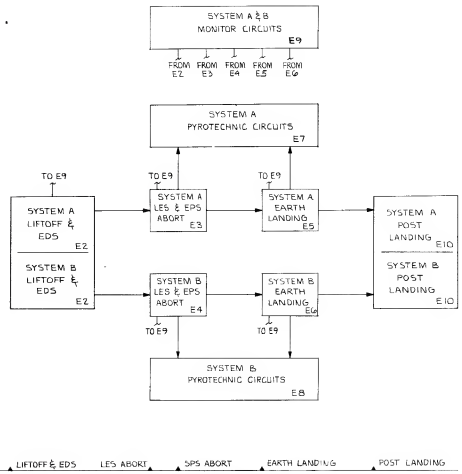
NASA LEWIS RESEARCH CENTER	CODE 77500	PHONE 216-433-4000	NORTH AMERICAN AVIATION, INC. SPACE AND INFORMATION SYSTEMS DIVISION
PROGRAM APOLLO	DEPARTMENT		FUEL CELL SYSTEM NO 2
			SIZE B	DRAWING NO V14-900017
			SCALE NONE	SHEET NO

PREPARED BY CHKD BY APPROVED BY DATE

V14-900017 C13


S14P53
FUEL CELL NO 1
C22-2467
PANEL 18
P/C ELECTRICAL
POWER
C15A5
PANEL 22
M.N. CIRCUIT
BREAKER PANEL
S14A22
S14A21
S14A6
S14A5
S14A4
P/C SWITCH
PANEL
C22-2467
PANEL 18
P/C 3
REACTANTS
C22-1A5
D.C.
COND
C15A5
PANEL 22
MTP C6A1
C15S2
CIRCUIT
INTERRUPTER
C15S1
CIRCUIT
INTERRUPTER
C15A5
PANEL 22
O2 HEATER
O2 REGULATOR
O2 PRESS
O2 TO 30
FUEL CELLS
O2
+ ELECTRODE
KOH
- ELECTRODE
H2 & STEAM
H2 TO 30
FUEL CELLS
H2 PREHEATER
H2 REGULATOR
H2 PRESS
H2 PUMP
H2O SEPARATOR
CONDENSER
H2 REGENERATOR
IN LINE
HEATER
BY-PASS
VALVE
THERMOPILE
ELECTRONIC SWITCH
FUEL CELL
(ONE SHOWN - 31 IN SERIES)
GLYCOL
ACCUMULATOR
SECONDARY
BYPASS VALVE
SECONDARY
REGENERATOR
GLYCOL COOLANT
PUMP
FUEL CELL
RADIATOR
RADIATOR
OUTLET TEMP
N2 FILL LINE
N2 TANK
N2 SHUTOFF
VALVE
N2 REGULATOR
N2 PRESS
EPS H2O
O2 PURGE
EPS H2
N2 PURGE
O2 SHUTOFF VALVE
O2
FLOWMETER
H2
FLOWMETER
TO O2
STORAGE
TO H2
STORAGE
O2 PURGE
H2 PURGE
POTABLE H2O
TO ECS
H2O
PH SENSOR
H2 COOLANT
MODULE FAN
TEMP
START
SYSTEM
H2O
VENT
COND
CONT
TEMP
INTER-CELL
HEATER
REPEATER
DRIVE MOTOR
PUMP DRIVE
MOTOR
PH SENSE
COND
SM
CM
AFT BULKHEAD
AFT BULKHEAD CM1 SM1
SM1 CM1 AFT BULKHEAD
P/C 3 H2 & O2 VALVE
28 VDC BAT
RELAY BUS
28 VDC MN
BUS A
28 VDC MN
BUS B
P/C 3 H2 OPEN
P/C 3 H2 CLOSE
P/C 3 O2 OPEN
P/C 3 O2 CLOSE
P/C NO 3 H2 PURGE
P/C NO 3 O2 PURGE
P/C NO 5 H2 PURGE
P/C NO 5 O2 PURGE
H2 PURGE
O2 PURGE
H2 PURGE
O2 PURGE
PHASE
CORRECTION
BOX
FUEL CELL
QTY 4 REF
MOTORS
AC
REF
PHASE
AC
REF
PHASE
AC
REF
PHASE


STOWED
STOWED
C15
MONITOR SYSTEM — GAS DISTRIBUTION
V14-900017



FLOW OF FUNCTIONAL INTEGRATED SYSTEMS SCHEMATICS SEQUENTIAL EVENTS CONTROL SUBSYSTEM

SECS REFERENCE DESIGNATORS

C6A1 MISSION CONTROL PROGRAMMER (MCP)
C6A2 MISSION CONTROL PROGRAMMER (MCP)
C18A1 MASTER EVENTS SEQUENCE CONTROLLER (MESC) SYSTEM A
C18A2 MASTER EVENTS SEQUENCE CONTROLLER (MESC) SYSTEM B
C19A1 REACTION CONTROL SUBSYSTEM CONTROLLER (RCSC) SYSTEM A
C19A2 REACTION CONTROL SUBSYSTEM CONTROLLER (RCSC) SYSTEM B
C20A1 EARTH LANDING SEQUENCE CONTROLLER (ELSC) SYSTEM A
C20A2 EARTH LANDING SEQUENCE CONTROLLER (ELSC) SYSTEM B
C20A4 PYRO CONTINUITY VERIFICATION BOX (PCVB)
S19A7 SM JETTISON CONTROLLER (SMJC) SYSTEM A
S19A8 SM JETTISON CONTROLLER (SMJC) SYSTEM B

E 1

DR BY	DIRINGER	27168
CHK BY	697-406	3881
APPROVED BY		
GHOFFMAN		
STEVENSON		
SCOTT SCOPO	DOWNEY & ETR	

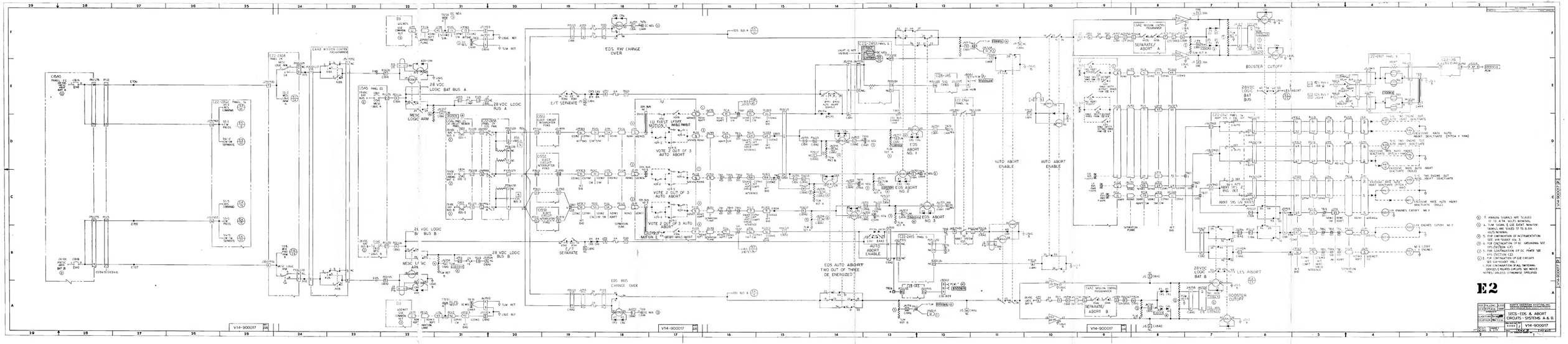
NORTH AMERICAN AVIATION, INC. SPACE and INFORMATION SYSTEMS DIVISION

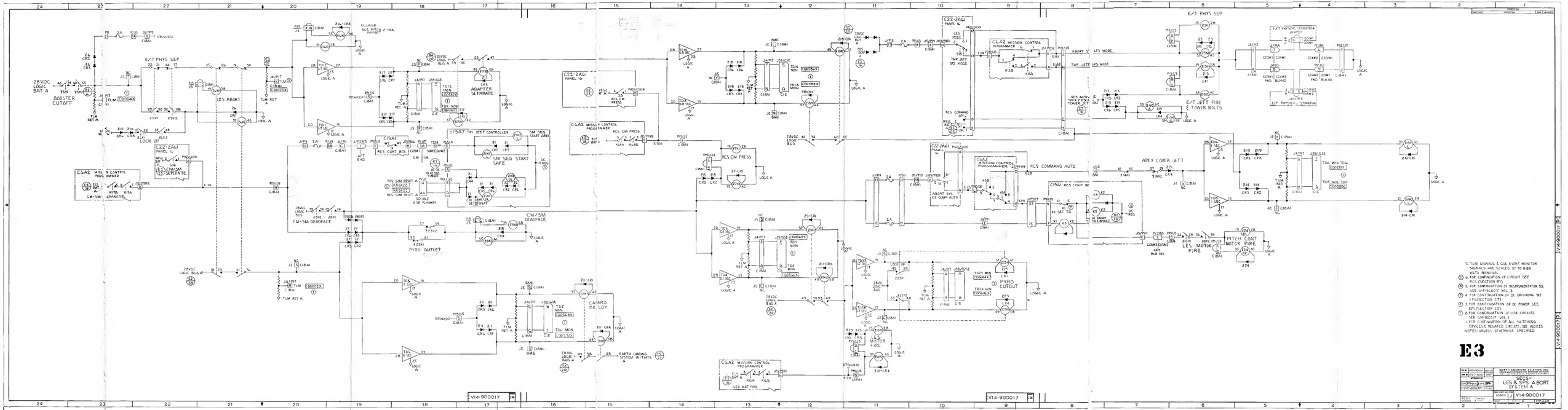
FLOW DIAGRAM AND REFERENCE DESIGNATOR

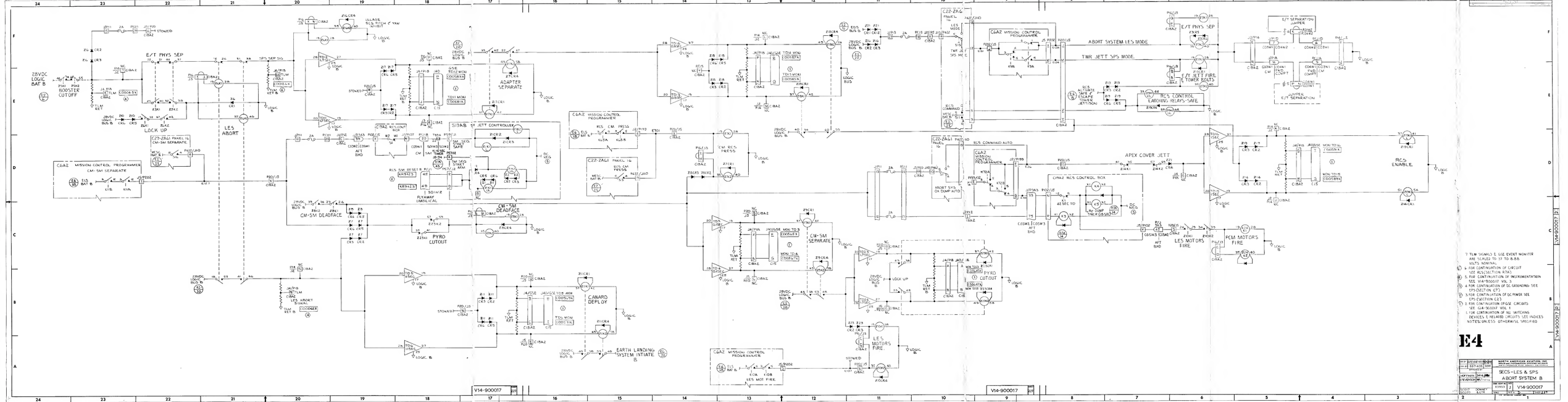
CODE IDENT NO 03953 SIZE J V14-900017

SCALE NONE REV D SHEET 214

V14-900017 D


EDS RW CHANGE OVER
EDS BUS CHANGE OVER
28 VDC LOGIC BAT BUS A
28 VDC LOGIC BUS A
28 VDC LOGIC BUS B
28VDC BAT BUS
MISC LOGIC ARM
EDS ABORT NO. 1
EDS ABORT NO. 2
EDS ABORT NO. 3
AUTO ABORT ENABLE
EDS AUTO ABORT TWO OUT OF THREE DE ENERGIZED
BOOSTER CUTOFF
SEPARATE / ABORT A
SEPARATE / ABORT B
LES ABORT
NO 1 LIGHT ENGINES
NO 2 LIGHT ENGINES
NO 3 LIGHT ENGINES
E2
SECS-EDS & ABORT CIRCUITS - SYSTEMS A & B
V14-900017


28VDC LOGIC BAT A
BOOSTER CUTOFF
E/T PHYS SEP
LES ABORT
LOCK UP
C22-2AG1 PANEL 16
CM/SM SEPARATE
CG2AZ MISSION CONTROL PROGRAMMER
CM-SM SEPARATE
ULLAGE 10% PITCH & YAW THRUST
28VDC LOGIC BUS A
28VDC LOGIC BUS B
28VDC LOGIC BUS
CM-SM DEADFACE
CM/SM DEADFACE
PYRO BATTFET
TLM RET A
TLM RET B
TLM RET
LOGIC A
LOGIC B
LOGIC
S13A7 SM JETT CONTROLLER
SM SEQ START ARM
SM SEQ START SAFE
RCS CONT BOX
RCS SM RESET A
RCS SM RESET B
RCS SM RESET
SC/SM GSE FLYAWAY
RCS CM PRESS
RCS COMMAND AUTO
ABORT SYS CM SUMP AUTO
C19A1 RCS CONT BOX
APEX COVER JETT
42 SEC TD
PITCH CONT MOTOR FIRE
LES MOTOR FIRE
PYRO CUTOUT
CAIRO DE LOY
EARTH LANDING SYSTEM INITIATE A
ADAPTER SEPARATE
TOE MON
TDE MON
TDE1A MON
TDE2A MON
TDE1A MIN TDE
TDE2A MIN TDE
TDE MIN TDE
TDE MON TDE
TDE MIN TDF
TDE MON TDF
E/T PHYSICAL SEPARATION JUMPER
E/T JETT FIRE & TOWER BOLTS
E/T PHYSICAL SEPARATION
ABORT
ABORT SYS
LES MODE
TWR JETT SYS MODE
TWR JETT
RCS ACTIV SAFE ENCK TOWER JETT
RCS COMMAND OFF
RCS COMMAND ON
ABORT
ABORT SYS
ABORT SYS CM SUMP
ABORT SYS CM SUMP AUTO
ABORT SYS CM SUMP MAN
ABORT SYS CM SUMP MAN BLK HD
ABORT SYS CM SUMP AUTO BLK HD

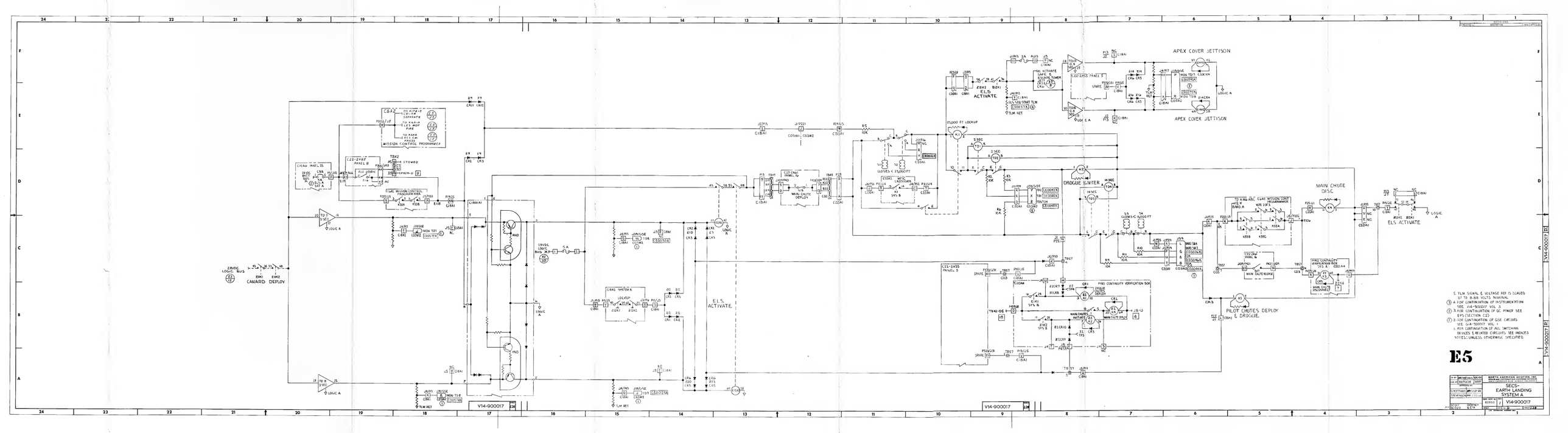


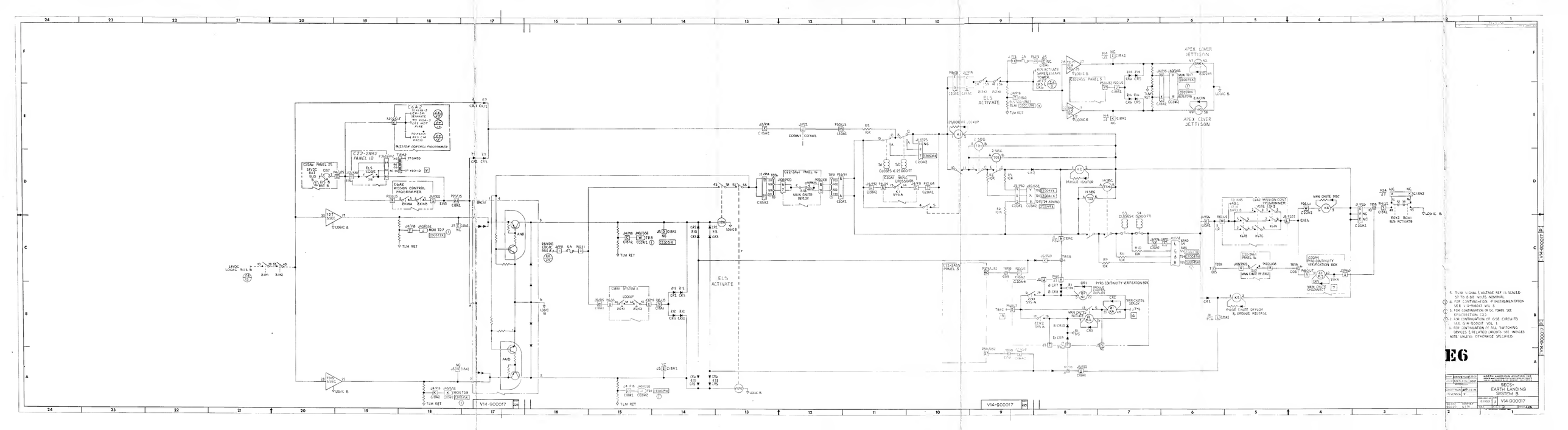
7 TLM SIGNALS E S/E EVENT MONITOR ARE SCALED TO 17 TO 8.85 VOLTS NOMINAL.
6 FOR CONTINUATION OF CIRCUIT SEE RCS(SECTION R7A1)
5 FOR CONTINUATION OF INSTRUMENTATION SEE V14-900017 VOL 3
4 FOR CONTINUATION OF DC GROUNDING SEE EPS(SECTION C7)
3 FOR CONTINUATION OF DC POWER SEE EPS(SECTION C3)
2 FOR CONTINUATION OF S/E CIRCUITS SEE G&N SCOOP VOL 1
1 FOR CONTINUATION OF ALL SWITCHING DEVICES & RELATED CIRCUITS SEE INDICES
NOTES: UNLESS OTHERWISE SPECIFIED

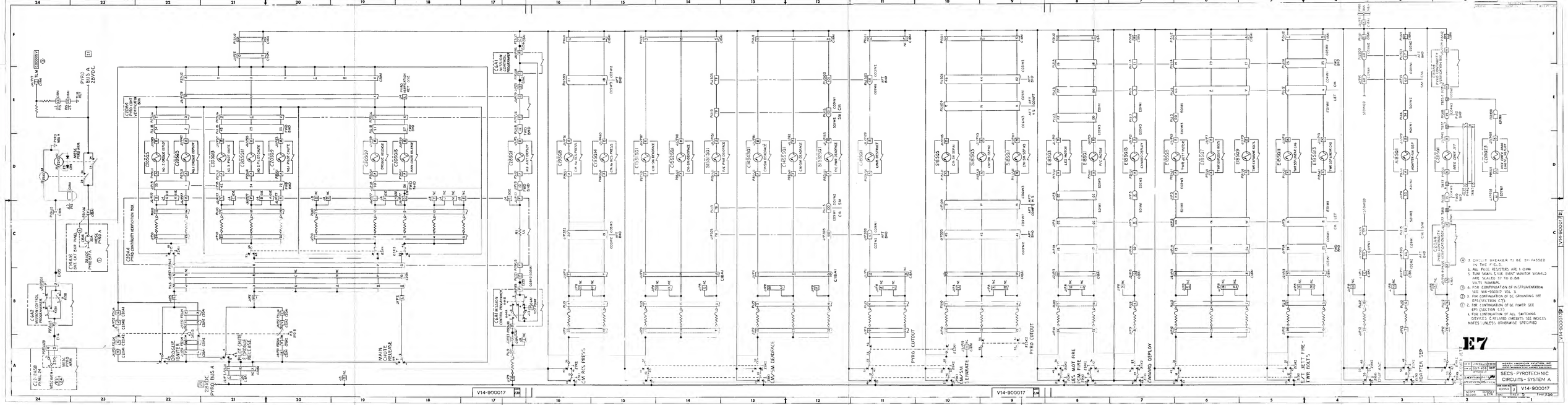
E4

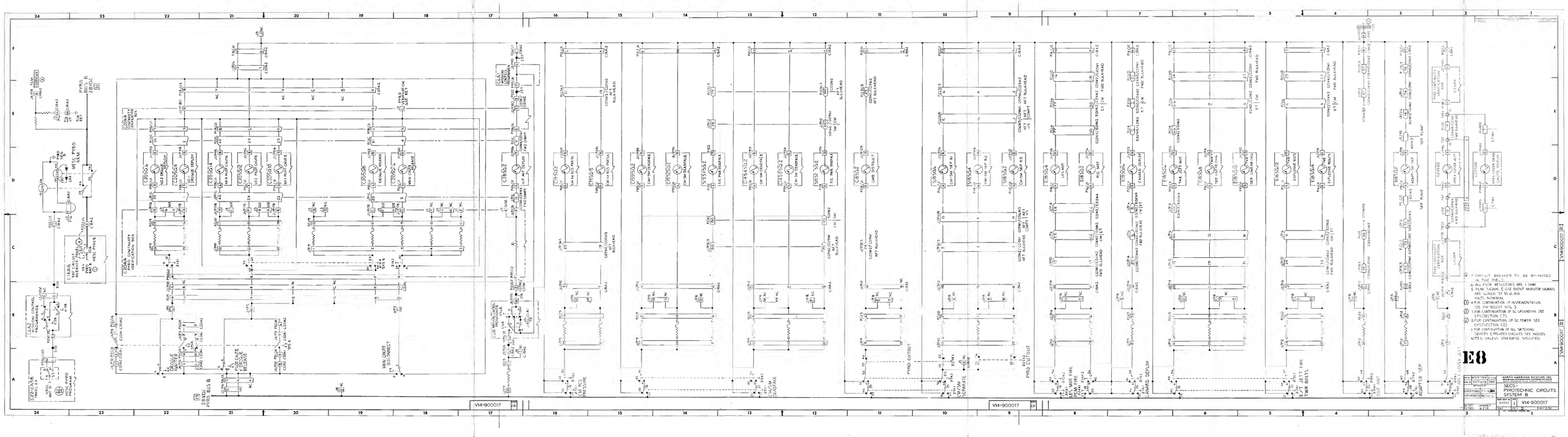
NORTH AMERICAN AVIATION, INC. SPACE AND INFORMATION SYSTEMS DIVISION		
SECS-LES & SPS ABORT SYSTEM B		
SIZE E	CODE IDENT NO 81911	V14-900017
SCALE NONE	SHEET 1 OF 1	

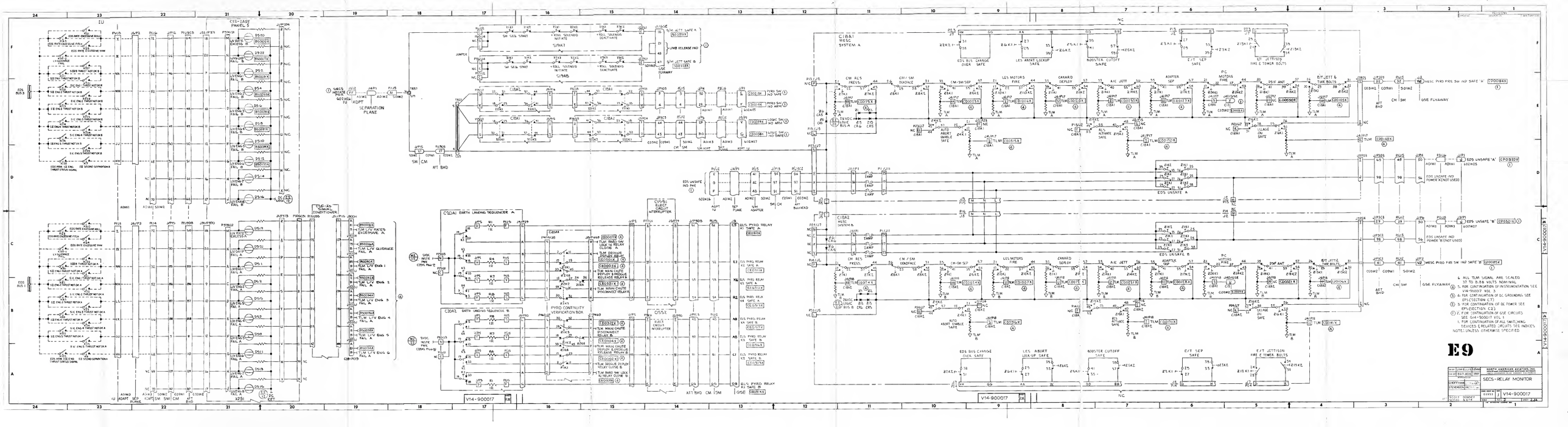
V14-900017 E1
V14-900017 E2
V14-900017 E3

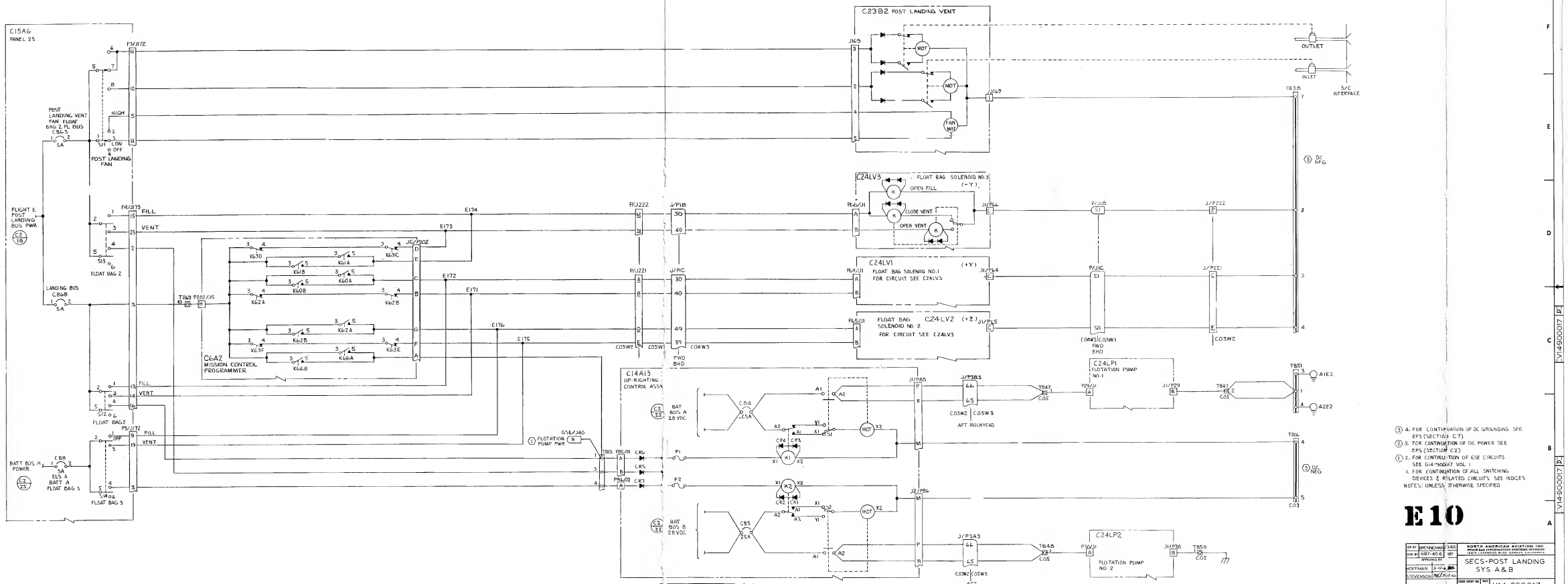

APEX COVER JETTISON
APEX COVER JETTISON
ELS ACTIVATE
ELS ACTIVATE
MAIN CHUTE DISC
PILOT CHUTES DEPLOY & DROGUE.
CANARD DEPLOY
DROGUE IGNITER
E5
S. TLM SIGNAL & VOLTAGE REF IS SCALED BY TO 8.88 VOLTS NOMINAL.
4. FOR CONTINUATION OF INSTRUMENTATION SEE V14-900017 VOL. 3
3. FOR CONTINUATION OF DC POWER SEE EPS SECTION C23
2. FOR CONTINUATION OF GSE CIRCUITS SEE GAA-900017, VOL. 1
1. FOR CONTINUATION OF ALL SWITCHING DEVICES & RELATED CIRCUITS SEE INDICES NOTES: UNLESS OTHERWISE SPECIFIED
SECS- EARTH LANDING SYSTEM A
V14-900017
V14-900017 E5
V14-900017 E5
V14-900017

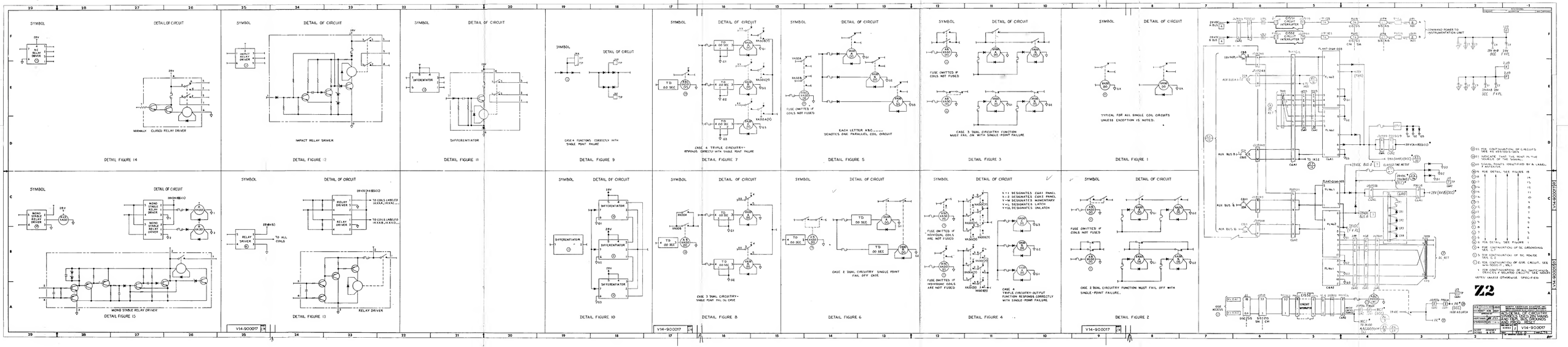

C62
C33-2ARS PANEL 1B
C33AR PANEL 2S
C62AR MISSION CONTROL PROGRAMMER
MISSION CONTROL PROGRAMMER
ELS LOGIC
CRE CR1
CR2 CR3
CR4 CR5
CR6 CR7
CR8 CR9
CR10 CR11
CR12 CR13
AND
AND
ELS ACTIVATE
LOGIC A
LOGIC B
LOGIC C
28VDC LOGIC BUS A
28VDC LOGIC BUS B
TLM RET
MAIN TO P
MAIN TO S
C33AR SYSTEM A
C33AR SYSTEM B
LOCKUP
C22-2AR1 PANEL 1K
C22-2AR2 PANEL 1M
C22-2AR3 PANEL 1N
C22-2AR4 PANEL 1P
C22-2AR5 PANEL 1S
MAIN CHUTE DEPLOY
CROSSOVER
RESERVE
MAIN CHUTE RELEASE
MAIN CHUTE DISCONNECT
MAIN CHUTE DISC
MAIN CHUTE INITIATE
MAIN CHUTES DEPLOY
PYRO CONTINUITY VERIFICATION BOX
PYRO CONTINUITY VERIFICATION BOX PROGRAMMER
DROGUE HEATER
PILOT CHUTE DEPLOY & DROGUE RETRACT
APEX COVER JETTISON
APEX LOWER JETTISON
ELS ACTIVATE
2 SEC
14 SEC
5A CLOSES < 5.2 OPENS
5A CLOSES < 15.0 OPENS
5A CLOSES < 25.0 OPENS
R5 10K
R6 10K
R10 10K
R11 10K
R12 10K
R13 10K
R14 10K
R15 10K
R16 10K
R17 10K
R18 10K
R19 10K
R20 10K
R21 10K
R22 10K
R23 10K
R24 10K
R25 10K
R26 10K
R27 10K
R28 10K
R29 10K

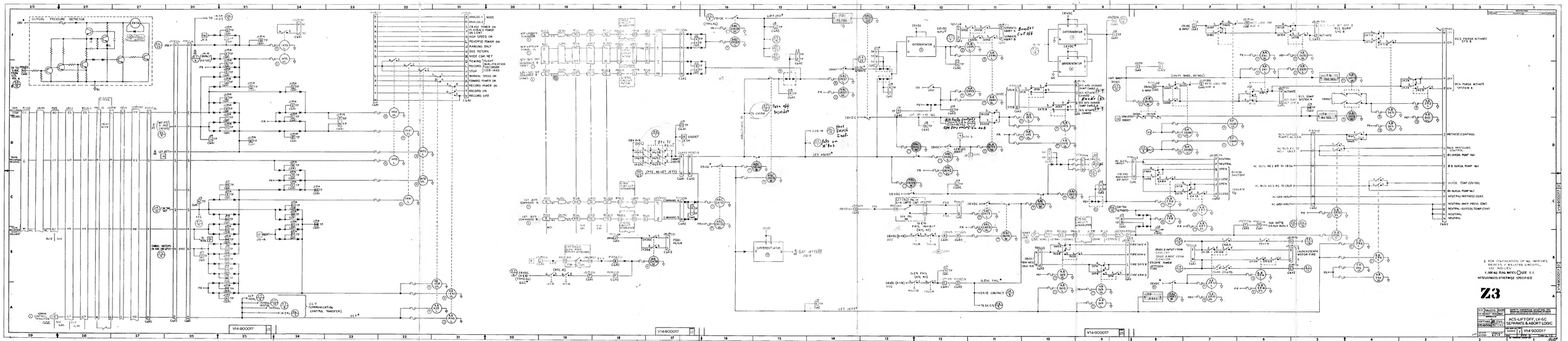

E7
V14-900017
SECS- PYROTECHNIC CIRCUITS- SYSTEM A
NORTH AMERICAN AEROSPACE DEFENSE CORPORATION
V14-900017
PYRO BUS A 28VDC
PYRO BUS A
MAIN CHUTE RELEASE
DROGUE CHUTE RELEASE
EXT CAB PYRO ARM
EXT CAB PYRO FIRE
CAB MISSION CONTROL PROGRAMMER
CAB PYRO CONT PANEL A
CM/SM DEADFACE
PYRO CUTOUT
CM/SM SEPARATE
LES MOT FIRE
LES ABT FIRE
CM/LES SEP
CM/LES ABT SEP
EWR JETT FIRE
EWR RALTS
ADAPTER SEP
ADAPTER ABT SEP
CM/SM ABT SEP
CM RCS PRESS
SM RCS PRESS
CM/SM ABT
CM/SM SEP
CM/SM ABT DEPLOY
CM/SM ABT JETT
CM/SM ABT RCS
CM/SM ABT


SECS PYROTECHNIC CIRCUITS SYSTEM B
V14-900017
E8
NORTH AMERICAN AVIATION, INC.
SPACE AND INFORMATION SYSTEMS DIVISION
SEP PLANE
ADAPTER SEP
MAIN CHUTE
PYRO CUTOUT
PYRO BUS A
PYRO BUS B
MISC PYRO
ARM PYRO BUS B
ARM PYRO BUS A
MAIN CHUTE DISCONNECT
PYRO CONTINUITY VERIFICATION BOX
PYRO CONTINUITY VERIFICATION
CM-SM SEP
LM/SM SEP
CM RCS PRESSURE
CM-SM DEPLOY
CM-SM SEPARATE
CM-SM JETT TWR
CM-SM JETT TWR BOLTS
CM-SM RCS PRESS
LM/SM SEP
LES MOTOR
LES ABORT
LES JETT TWR
LES JETT TWR BOLTS
LES PITCH
LES YAW
LES SEP
LES SEP NOS
LES DEPLOY
LES ATT
LES ATT COVER
LES ATT COVER JETT
LES ATT COVER JETT MOTOR
LES ATT COVER JETT TWR
LES ATT COVER JETT TWR BOLTS
LES ATT COVER SEP
LES ATT COVER SEP NOS
LES ATT COVER DEPLOY
LES ATT COVER DEPLOY MOTOR
LES ATT COVER DEPLOY TWR
LES ATT COVER DEPLOY TWR BOLTS
LES ATT COVER SEP PLANE
LES ATT COVER SEP PLANE NOS
LES ATT COVER DEPLOY PLANE
LES ATT COVER DEPLOY PLANE MOTOR
LES ATT COVER DEPLOY PLANE TWR
LES ATT COVER DEPLOY PLANE TWR BOLTS


IU
CSE-LASS PANEL 5
EDS RATE EXCESSIVE ROLL
EDS RATE EXCESSIVE PITCH
EDS RATE EXCESSIVE YAW
S/C ENG 1 THRUST NOT OK A
S/C ENG 1 THRUST NOT OK B
S/C ENG 2 THRUST NOT OK A
S/C ENG 2 THRUST NOT OK B
S/C ENG 3 THRUST NOT OK A
S/C ENG 3 THRUST NOT OK B
S/C ENG 4 THRUST NOT OK A
S/C ENG 4 THRUST NOT OK B
EDS MAN SEP END SIGNATURA
S/C ENG THRUST NOT OK A
S/C ENG THRUST NOT OK B
EDS BUS 1
EDS BUS 2
ADAPT SEP PLANE
SEPARATION PLANE
SM SEQ START
SM SEQ SIGNAT
SIM A7
+ROLL SOLENOIDS INITIATE
+ROLL SOLENOIDS DEACTIVATE
S/M JETT SAFE A
S/M JETT SAFE B
UMB RELEASE IND
USE FLYAWAY
C1BA1
C1BA2
C1DA1 EARTH LANDING SEQUENCER A
C1DA2 EARTH LANDING SEQUENCER B
PYRO CONTINUITY VERIFICATION BOX
C1SS1 ELECT CIRCUIT INTERRUPTER
C1SS2 ELECT CIRCUIT INTERRUPTER
EDS UNSAFE NO PWR
SM CM
ADAPT
SEP PLANE
ADAPTER
BULKHEAD
AFT BHD
CM SM
GSE FLYAWAY
CM RCS PRESS
CM / SM DIAPHRAM
CM-SM SEP
LES MOTORS FIRE
CANARD DEPLOY
AIR JETT
ADAPTER SEP
P.C MOTORS FIRE
PSM ANT
E/T JETT & TUNNEL BOLTS
E/T SEP SAFE
E/T JETTISON FIRE E TOWER BOLTS
LES ABORT SAFE
BOOSTER CUTOFF SAFE
LES ARMED LOCKUP SAFE
EDS BUS CHARGE OVER SAFE
EDS BUS CHARGE CHEK SAFE
AUTO ABORT ENABLE SAFE
AUTO ABORT ENABLE ARMED
LES NITRATE SAFE
LES JETTISON SAFE
EDS UNSAFE A
EDS UNSAFE B
EDS UNSAFE IND POWER'A'(NOT USED)
EDS UNSAFE IND POWER'B'(NOT USED)
MESC PYRO FIRE SW IND SAFE 'A'
MESC PYRO FIRE SW IND SAFE 'B'
EDS UNSAFE 'A'
EDS UNSAFE 'B'
E9
SECS-RELAY MONITOR
NORTH AMERICAN AVIATION, INC.
SPACE AND INFORMATION SYSTEMS DIVISION
SEAL BEACH, CALIFORNIA
V14-900017
SCALE NONE
SHEET 1 OF 1


C15A6
PANEL 25
P3/J172
POST LANDING VENT FAN FLOAT BAG 2 PL BUS
CB43
5A
POST LANDING FAN
HIGH
LOW
OFF
S11
FLOAT BAG 2
FILL
VENT
S12
FLOAT BAG 3
S13
FLIGHT E POST LANDING BUS PWR
LANDING BUS
CB68
BATT BUS A POWER
CB8
ELS A
BATT A
FLOAT BAG 3
C6A2
MISSION CONTROL PROGRAMMER
K61A
K61B
K60B
K60A
K62A
K62B
K63F
K63E
K66B
K66A
K63D
K63C
K63B
K62C
K62D
J5/P102
TB69 P202/J5
E174
E173
E172
E171
E176
E175
P1/J222
P1/J221
J/P1B
J/P1C
C03W2
C03W1
C04W3
FWD BHD
C14A13
UP-RIGHTING CONTROL ASSY
BAT BUS A 28 VDC
BAT BUS B 28 VDC
CB4
CB5
25A
MOT
K1
K2
CR1
CR2
CR3
CR4
CR5
CR6
F1
F2
TB85
P86/J1
P86/J2
G5E/J40
FLOTATION PUMP PWR
C23B2 POST LANDING VENT
J169
OUTLET
INLET
S/C INTERFACE
FWD MOT
C24LV3
FLOAT BAG SOLENOID NO.3 (-Y)
OPEN FILL
CLOSE VENT
OPEN VENT
P66/J1
J/P66
C24LV1
(+Y)
FLOAT BAG SOLENOID NO.1
FOR CIRCUIT SEE C24LV3
C24LV2
(+Z)
FLOAT BAG SOLENOID NO. 2
FOR CIRCUIT SEE C24LV3
P3/J1B
P3/J1C
J/P222
J/P221
C03W3/C03W1
C03W2
C24LP1
FLOTATION PUMP NO.1
P85/J1
J/P85
J/P383
TB47
C05
J/P29
TB51
A1E2
A2E2
TB4
TB3B
TB4B
C03
C24LP2
FLOTATION PUMP NO. 2
P30/J1
J/P30
TB50
J/P3A3
AFT BULKHEAD
3. DC NEG
4. DC NEG
2. DC NEG
1. FLOTATION PUMP PWR
NOTES: UNLESS OTHERWISE SPECIFIED
1. FOR CONTINUATION OF ALL SWITCHING DEVICES & RELATED CIRCUITS SEE INDICES
2. FOR CONTINUATION OF GSE CIRCUITS SEE G14-900017 VOL I
3. FOR CONTINUATION OF DC POWER SEE EPS (SECTION C2)
4. FOR CONTINUATION OF DC GROUNDING SEE EPS (SECTION C7)
E10
NORTH AMERICAN AVIATION, INC.
SECS-POST LANDING SYS A&B
V14-900017
14-900017
REVISIONS
DRAWN BRENNEMAN 3-6-6
CHKD BY 0927-40 6-7
APPROVED BY
HOFFMAN 3-17-66
STEVENSON 3/23/66
SCOTT DONNER SC 000 & ELTR

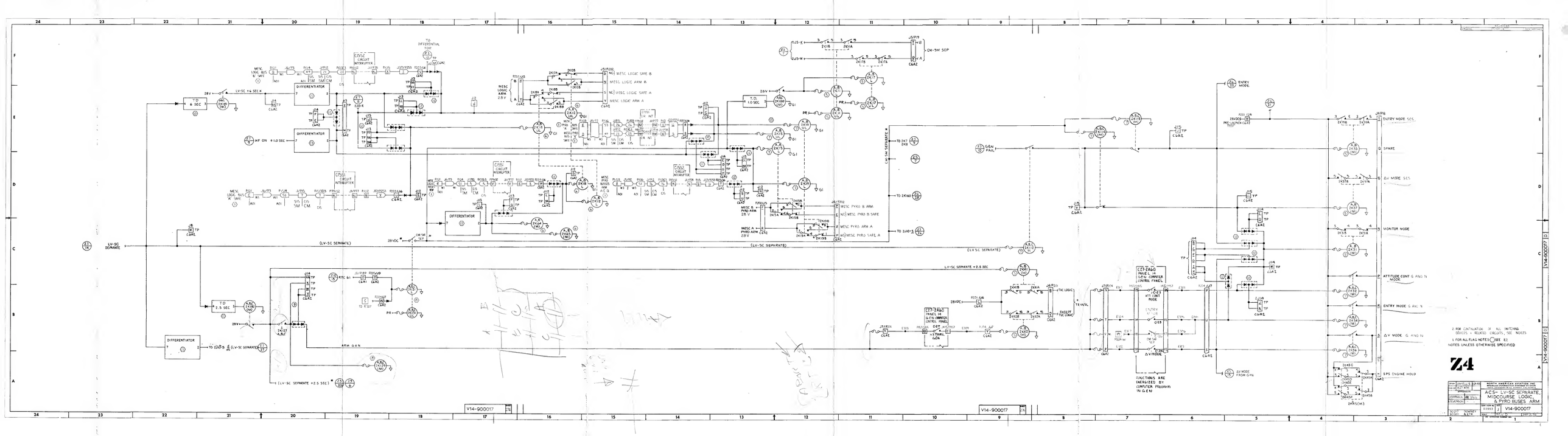

SYMBOL
DETAIL OF CIRCUIT
AC RELAY DRIVER
28V
NORMALLY CLOSED RELAY DRIVER
DETAIL FIGURE 14
IMPACT RELAY DRIVER
DETAIL FIGURE 12
DIFFERENTIATOR
DETAIL FIGURE 11
CASE 4 FUNCTIONS CORRECTLY WITH SINGLE POINT FAILURE
DETAIL FIGURE 9
CASE 4 TRIPLE CIRCUITRY- REMAINS CORRECTLY WITH SINGLE POINT FAILURE
DETAIL FIGURE 7
EACH LETTER A,B,C ..... DENOTES ONE PARALLEL COIL CIRCUIT
DETAIL FIGURE 5
FUSE OMITTED IF COILS NOT FUSED
CASE 3 DUAL CIRCUITRY FUNCTION MUST FAIL ON WITH SINGLE POINT FAILURE
DETAIL FIGURE 3
TYPICAL FOR ALL SINGLE COIL CIRCUITS UNLESS EXCEPTION IS NOTED.
DETAIL FIGURE 1
MONO STABLE RELAY DRIVER
DETAIL FIGURE 15
RELAY DRIVER
DETAIL FIGURE 13
DIFFERENTIATOR
CASE 3 DUAL CIRCUITRY- SINGLE POINT FAIL IN CASE
DETAIL FIGURE 10
DETAIL FIGURE 8
CASE 2 DUAL CIRCUITRY SINGLE POINT FAIL OFF CASE
DETAIL FIGURE 6
X = DESIGNATES C&A1 PANEL
L = L DESIGNATES C&A1 PANEL
Y = W DESIGNATES MOMENTARY
Y = L DESIGNATES LATCH
Y = U,L DESIGNATES UNLATCH
FUSE OMITTED IF INDIVIDUAL COILS ARE NOT FUSED
CASE 4 TRIPLE CIRCUITRY-OUTPUT FUNCTION RESPONDS CORRECTLY WITH SINGLE POINT FAILURE
DETAIL FIGURE 4
FUSE OMITTED IF COILS NOT FUSED
CASE 2 DUAL CIRCUITRY FUNCTION MUST FAIL OFF WITH SINGLE-POINT FAILURE.
DETAIL FIGURE 2
V14-900017
V14-900017
V14-900017
Z2
NORTH AMERICAN ROCKWELL INFORMATION SYSTEMS COMPANY
CONSOLE & TEST EQUIPMENT
AND C&A BUS GROUNDS
SCHEMATIC
V14-900017
SCALE NONE
SHEET 1 OF 1

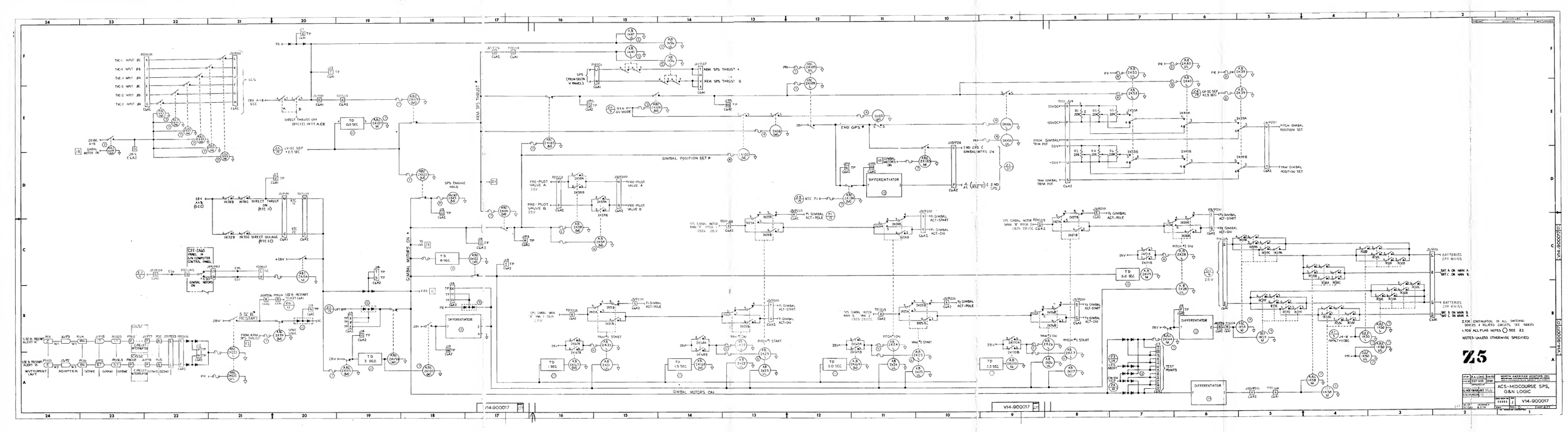


1. FOR CONTINUATION OF ALL SWITCHES, RELAYS & ISOLATED CIRCUITS, SEE INDICES.
2. FOR ALL FEAL MATES, SEE ICD
NOTES:UNLESS OTHERWISE SPECIFIED

Z3

		NORTH AMERICAN AVIATION, INC. SPACE AND INFORMATION SYSTEMS DIVISION
		ACS-LIFT OFF, LV-SC SEPARATE & ABORT LOGIC
		SIZE E
		V14-900017
		SCALE NONE SHEET 1 OF 1


LV-SC SEPARATE
28VDC
CM-SM SEP
TO DIFFERENTIAL TOR
MESC LOGIC BUS B SAFE
MESC LOGIC BUS A SAFE
DIFFERENTIATOR
TD 6 SEC
TD 1.0 SEC
TD 2.5 SEC
MF ON + 1.0 SEC
MESC LOGIC ARM 28V
MESC B PYRO ARM 28V
MESC A PYRO ARM 28V
MESC PYRO B ARM
MESC PYRO B SAFE
MESC PYRO A ARM
MESC PYRO SAFE A
(LV-SC SEPARATE)
(LV-SC SEPARATE +2.5 SEC)
ARM G+N
RTC G1
PR
GEN FAIL
LV-SC SEPARATE +2.5 SEC
ENTRY MODE
ENTRY MODE SCS
SPARE
ΔV MODE SCS
MONITOR MODE
ATTITUDE CONT G AND N MODE
ENTRY MODE G AND N
ΔV MODE, G AND N
SPS ENGINE HOLD
ΔV MODE FROM G+N
CM-SM SEP
TO ZK180
TO ZLO-S
TO ZLO-S
TO ZK17 ZK8
TO ZK17 ZK8
TO ZK17 ZK8



FOR CONTINUATION OF ALL SWITCHING DEVICES & RELATED CIRCUITS, SEE INDICES.

FOR ALL PLAN NOTES ○ SEE 22.

NOTES: UNLESS OTHERWISE SPECIFIED

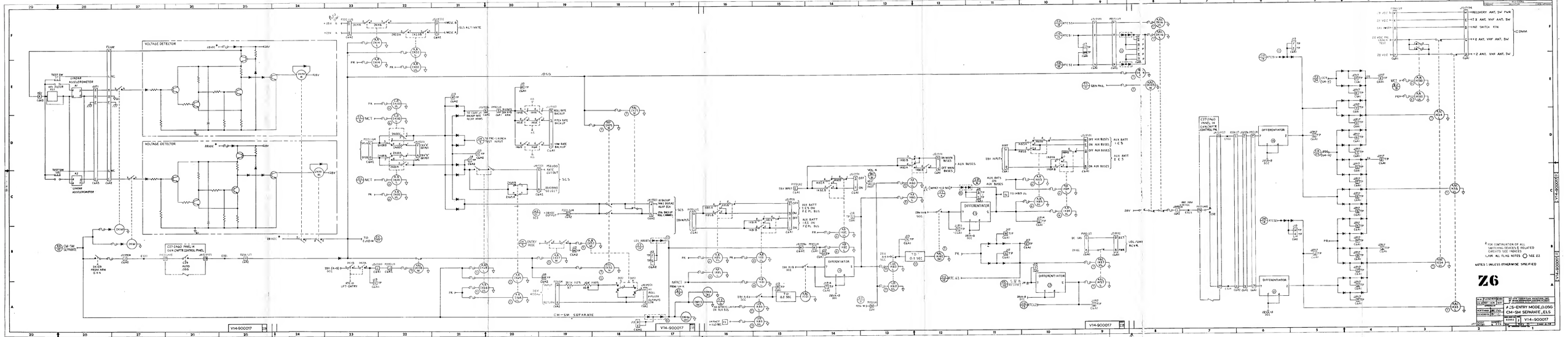
Z5

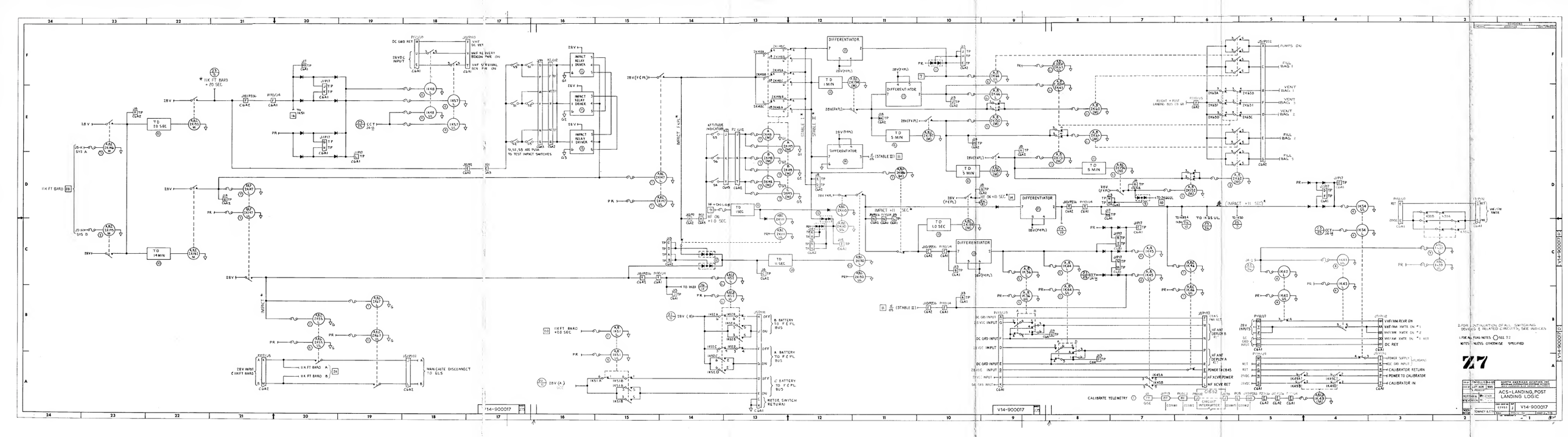
NORTH AMERICAN AVIATION, INC. SPACE & INFORMATION SYSTEMS DIVISION

ACS-MIDCOURSE SPS, G&N LOGIC

V14-900017

SCALE NONE | SHEET 1 | SIZE D


VOLTAGE DETECTOR
LINEAR ACCELEROMETER
CM-SM SEPARATE
CM-SM SEPARATE
TO 0.1 SEC
TO 0.5 SEC
DIFFERENTIATOR
DIFFERENTIATOR
DIFFERENTIATOR
DIFFERENTIATOR
C27-2A&D PANEL 14 G&N CMPTR CONTROL PNL
C27-2A&D PANEL 14 G&N CMPTR CONTROL PNL
V14-900017
V14-900017
V14-900017
Z6
4.25-ENTRY MODE,0.05G
CM-SM SEPARATE, ELS
V14-900017


ACS-LANDING, POST LANDING LOGIC
V14-900017
NORTH AMERICAN AVIATION INC
SPACE AND INFORMATION SYSTEMS DIVISION
DRAWN
CHECKED
APPROVED
SIZE
SCALE
SHEET
REVISIONS
DESCRIPTION
DATE
APPROVED
11K FT BARO + 20 SEC
TD 10 SEC
TD 1 MIN
TD 5 MIN
TD 15 SEC
TD 30 SEC
TD 1.5 SEC
TD 0.5 SEC
28V DC BUS
IMPACT RELAY DRIVER
IMPACT RELAY
DIFFERENTIATOR
ATTITUDE INDICATOR
FF SYS
MAIN CHUTE DISCONNECT TO GLS
28V INPUT CHUTE BARO
11K FT BARO A
11K FT BARO B
A BATTERY TO F C PL BUS
B BATTERY TO F C PL BUS
C BATTERY TO F C PL BUS
MOTOR SWITCH RETURN
PUMPS ON
FILL BAG 1
VENT BAG 1
VENT BAG 2
FILL BAG 2
FILL BAG 3
RIGHT + POST LANDING BUS OK
CALIBRATE TELEMETRY
HF ANT DEPLOY A
HF ANT DEPLOY B
HF XCVR/POWER
HF XCVR RET
VHF/AM RCVR ON
VHF/AM XMTR ON #1
VHF/AM XMTR ON #2
VHF/AM XMTR ON #1 KEY
DC RET
POWER SUPPLY
DC GRD INPUT
CALIBRATOR RETURN
POWER TO CALIBRATOR
CALIBRATOR IN
VHF/AM XMTR
TO IK35 UL
TO IK50
TO IK54
TO IK64
TO IK30
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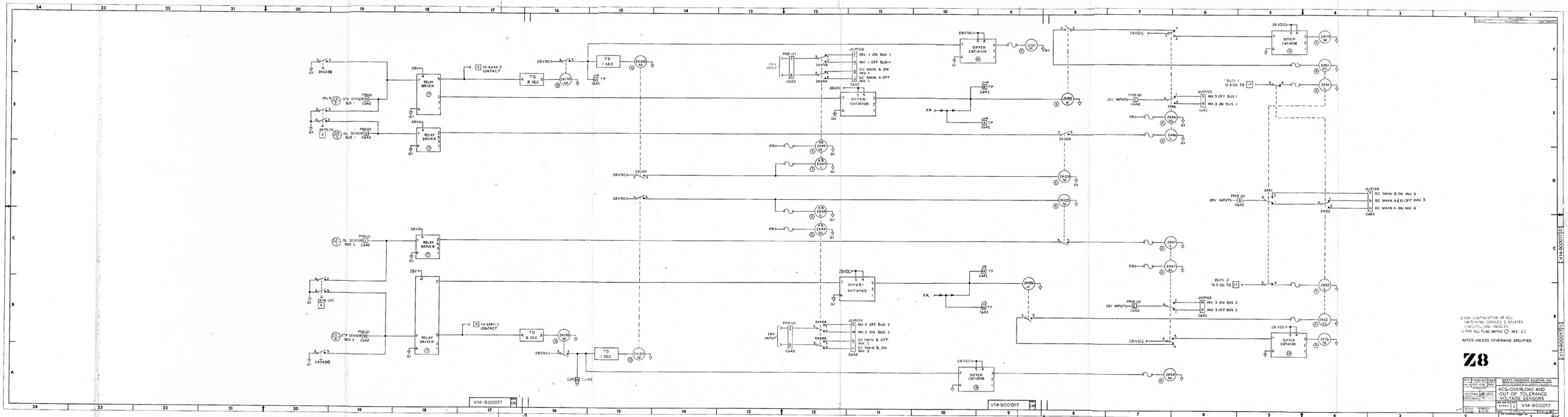
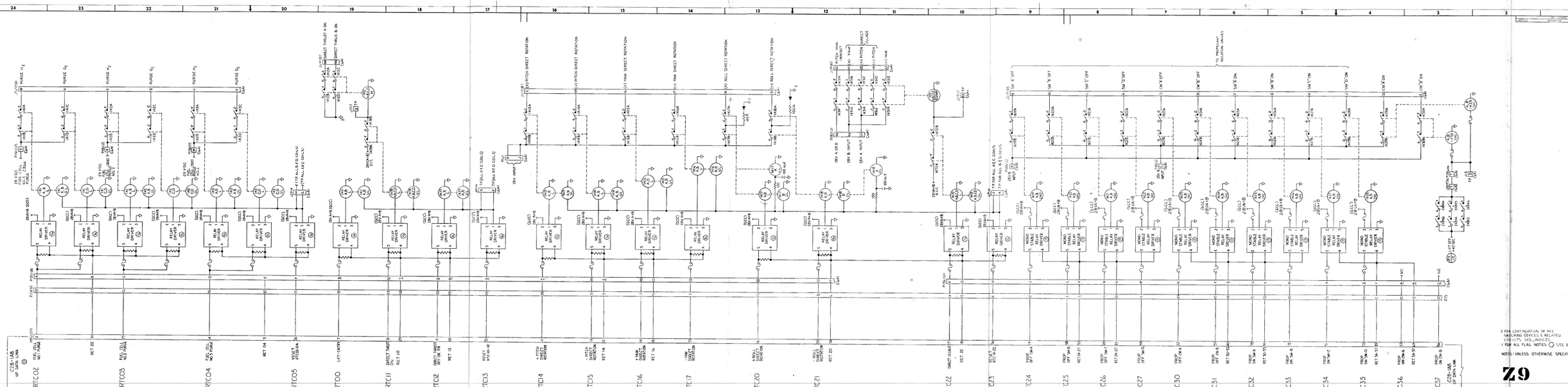
TO


2K50(M)
OTV SENSOR BUS 1
OL SENSOR BUS 1
2K76(M)
2K54(M)
OL SENSOR BUS 2
OTV SENSOR BUS 2
RELAY DRIVER
TO 2K52-3 CONTACT
TO 2K51-3 CONTACT
TD 8 SEC
TD 1 SEC
2K199
2K200
2K198
2K197
DIFFER-ENTIATOR
2K49A
2K49B
2K48A
2K48B
2K49
2K48
2K200
2K204
2K206
2K47
2K46
2K45
2K44
2K52
2K51
2K54
2K75
2K76
INV. 1 ON BUS 1
INV. 1 OFF BUS 1
DC MAIN A ON INV. 1
DC MAIN A OFF INV. 1
INV. 2 OFF BUS 2
INV. 2 ON BUS 2
DC MAIN B OFF INV. 2
DC MAIN B ON INV. 2
INV. 3 OFF BUS 1
INV. 3 ON BUS 1
INV. 3 ON BUS 2
INV. 3 OFF BUS 2
DC MAIN B ON INV. 3
DC MAIN A OFF INV. 3
DC MAIN A ON INV. 3
28VDC
PR
BUS 1 TO 8 SEC TO 17
BUS 2 TO 9 SEC TO 17
J1/P1 SHEET 2 ZONE C-4
J2/P2 SHEET 2 ZONE C-4
J3/P3 SHEET 2 ZONE C-4
J4/P4 SHEET 2 ZONE C-4
J5/P5 SHEET 2 ZONE C-4
J6/P6 SHEET 2 ZONE C-4
J7/P7 SHEET 2 ZONE C-4
J8/P8 SHEET 2 ZONE C-4

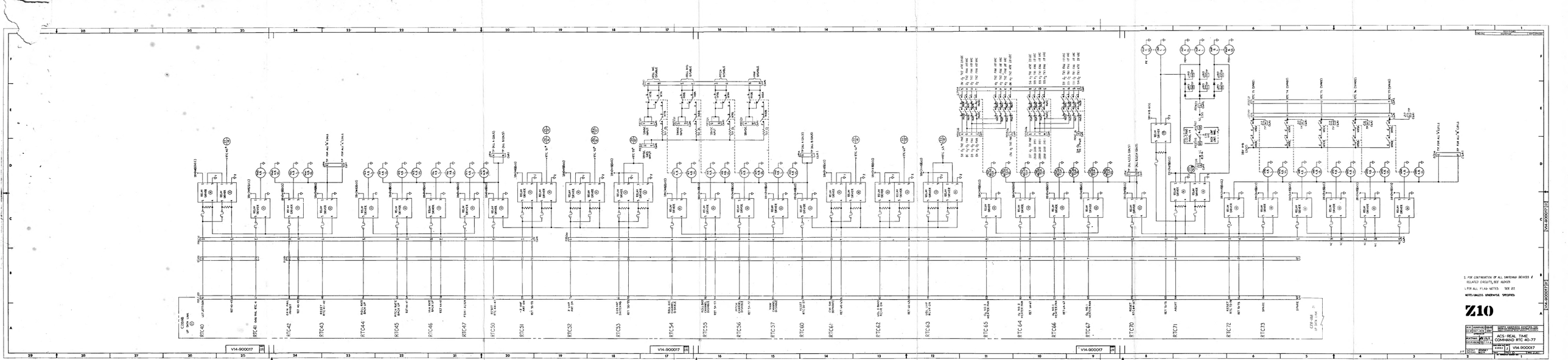


2 FOR CONTINUATION OF ALL SWITCHING DEVICES & RELATED CIRCUITS SEE_INDICES
3 FOR ALL FLAG NOTES ○ SEE 2.2

NOTES: UNLESS OTHERWISE SPECIFIED

Z9

NORTH AMERICAN AVIATION, INC.	
ACS-REAL TIME COMMANDS RTC 02-37	
SIZE: D	CODE IDENT NO: 81991
V14-900017	
SCALE: NONE	SHEET 1 OF 1


RTC40
RTC41
RTC42
RTC43
RTC44
RTC45
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RTC52
RTC53
RTC54
RTC55
RTC56
RTC57
RTC60
RTC61
RTC62
RTC63
RTC64
RTC65
RTC66
RTC67
RTC70
RTC71
RTC72
RTC73
V14-900017
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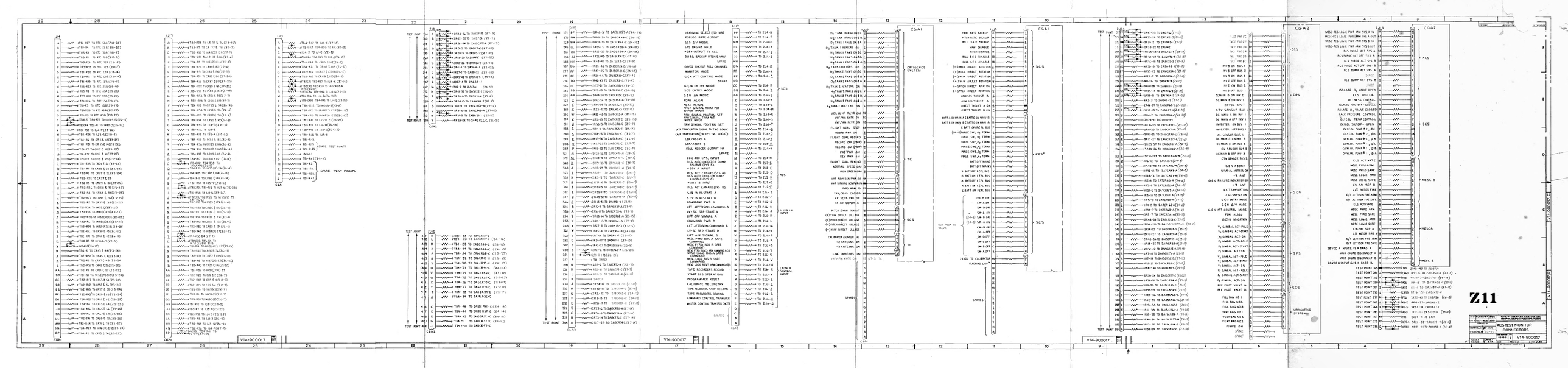
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